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AUTHOR McKinlay, Bruce
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ABSTRACT

The Career Information System (CIS) was developed with the purpose of providing direct access to career and labor market information in forms meaningful to students and other clients and integrated into schools and social agencies in the State. The document discusses the information system, dealing with the topics: economics of information, information sources, data storage, career planning information file maintenance, manpower requirements, and evaluation of career planning information content and timeliness. In attempting to systematize the delivery of information, CIS implemented both the QUEST questionnaire and occupational descriptors. While other user components were less used, each was considered as the most valuable system component by a significant portion of those who used it. Two main CIS services were provided to users: (1) consultation, demonstration, and inservice training for staff of agencies where the career information delivery system is used, and (2) supply and interpretation of labor market information to program planners. The document also discusses the Oregon Manpower Studies, surveys on the pertinence of information requests, and a detailed financial analysis. Included are graphic tables and charts and 10 appendixes. (BP)

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OREGON CAREER INFORMATION SYSTEM: AN EVALUATION OF PHASES I AND II OF A THREE-PHASE DEVELOPMENT PROJECT

FINAL REPORT
CONTRACT NO. 82-41-7203

Submitted by:

BRUCE MCKINLAY, PROJECT DIRECTOR

On behalf of the Oregon Career Information System, a consortium with representation from the Oregon Board of Education, the Oregon Employment Division, the Oregon State System of Higher Education, intermediate education districts and local school districts.

MARCH, 1974

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CHAPTER I

SUMMARY AND BASIC CONCLUSIONS

The Career Information System is not a conventional research project in which a research report is the principal product. Instead it is an attempt to institute a systematic information development procedure and to implement and manage an effective system for delivering information to program planners and clients, all through the cooperative efforts of established institutions and institutional resources.

As a concept and as a functioning organization, the Career Information System (CIS) can be viewed both as a system itself and as a component designed to complete a larger system. As a component the principal CIS goal is bridging the gap between occupational labor market information producers and consumers. The resulting CIS functions are both catalytic and contributory. Facilitating inter-agency cooperation and communication is an important part of systematic information development and delivery. Thus, both system functions are essential to evaluation of CIS activity and impact during the first two phases of the three phase project.

This evaluation comes approximately mid-way in the implementation of the system. Therefore, the evaluation cannot attempt to reach final conclusions on all matters, but instead to assess progress to date and to chart a path for Phase III. Obviously some matters, such as information development methodology, were dealt with early, while others, such as implementation in agencies and some evaluation, were planned for Phase III.

The evaluation concentrates on the program developmental activities called for in the CIS proposal for Phases I and II. In general, it documents work completed, and critiques both the methods and the progress to date. Essentially, the evaluation is a staff effort.

Realization of the need for coordinated management of occupational information antedated the formation of the Career Information System. When representatives from data-producing and occupational information-using agencies began to assess the need and possibilities of responding to it, several factors converged to make CIS a reality. The Oregon Employment Division was involved in substantial occupational labor market research; the Oregon Board of Education was developing a major career education thrust, and the Occupational Information Access System was proving an effective means of delivering occupational information to individuals involved in occupational exploration and career decision-making. These factors and the unified commitment of the group of agency representatives eventually resulted in a proposal for establishment of the Career Information System as a model interagency consortium with the purpose of providing direct access to current career and labor market information in forms meaningful to students and clients and integrated into schools and social agencies in the state. With essential endorsements and pledges of cooperation from the heads of pertinent state agencies and local institutions, the Career Information System was established under the authority of a Board and a staff was organized to compile labor market data and facilitate the integration of career information into agency and school counseling and instructional programs. CIS has developed strong working relationships with its user agencies, entering with them into formal agreements which clearly communicate the specific responsibilities of each; it has involved these user agencies in continued development of the CIS function and has specified and obtained agreement on "Standards for Use" of the System.

The project proposal is quite explicit in committing CIS to the development of a systematic information updating design. Locating sources and obtaining data are key elements. The strategy of relying on existing data resources was also set forth in the proposal and seemed to be supported by several advantages, although the costs and time required to negotiate and implement such agreements were underestimated. Major efforts have been put forth to establish working relationships with the Oregon Employment Division, Occupational Outlook Section of the Bureau of Labor Statistics as well as other organizations. None has been totally successful, but major exchanges of information have taken place.

Relatively unprocessed data sources have also been used by CIS. Telephone contacts with persons knowledgeable about the occupation, newspaper "Help Wanted" sections and the "Job Bank Openings Summary" have been principal sources. Generally these sources have proved to be inexpensive and helpful, both in updating career planning information and in consulting with program planners.

The occupational descriptions are the heart of the career information delivery system and pose the greatest demands for information. Greatest needs are for up-to-date information on current employment, wages, occupational supply, hiring requirements, and training sources to be used in several System components such as the descriptions, Education File, Attribute File, and cassette interviews.

The CIS carries on continuous updating of information as new data become available as well as conducting periodic reviews of all System components and information content. Several research instruments have been developed to assist these processes. The periodic review is not an attempt to examine all System aspects but to accomplish predetermined objectives. Materials are submitted to review panels for validation. While there is general satisfaction with this design for information maintenance, experimentation has been limited due primarily to the System changes and modifications required by marketing successes. The periodic review process is also utilized to increase integration and consistency between System components.

Two principal methods of evaluating the content of CIS information are utilized: (1) analysis of user comments; (2) comparison with model information systems or statements of need. Comments of users became available when coordinators in the schools were asked to respond to questions about the System. Comments indicated that users were confident about the accuracy of the information and suggestions for improvement generally called for more audio-visual material.

A list of information items prepared by the California Department of Human Resources is used as a model against which to evaluate the capacity of the Career Information System. The comparison suggests that CIS is delivering most of the information found useful by the California agency, although usually in less detail. Analysis shows that the CIS is delivering most of the required information although some of the data are not yet available.

Extensive field testing of the occupational information system has established the overall attractiveness and effectiveness of the System for a wide range of different kinds of clients in different school and agency settings. Evaluation of individual components and both computer and manual versions of the System has shown that the QUEST questionnaire and list and the occupational descriptions are the backbone of the System. The attractiveness of the teletype terminal,

a feature of the computerized version, has no parallel in the occupational needle-sort version, yet both versions have been found to be effective. The other information components, namely, the Bibliography and Books, the occupational interview cassettes, the VISIT file, and the educational file, are used much less, yet a significant proportion of users rate each of these components as most helpful or most valuable. Further evaluation of some of these components is needed, and continued development and modification of the CIS information delivery system and system components is essential.

User satisfaction with the quantity, quality and format of the information received is consistently high, indicating that the flow of information between data producers and decision makers can be completed. Users not only report getting accurate, relevant occupational information, but also indirectly learn about the occupational exploration and career decision-making process. The delivery systems installed in schools have continued to receive high volume usage over time but have had only a moderate effect on instructional programs.

High school teachers and counselors have been impressed with the high rate of use and high degree of involvement by students with this multi-media approach to occupational information delivery. However, counselors generally conclude that the system lacks effectiveness and is inappropriate for persons with very low or no reading skills. Testing in Employment Division offices in Portland demonstrated a consistent attractiveness for ES clients. Continuing pilot use with special clients groups such as NYC enrollees, WIN program participants, ADC mothers and elderly persons seeking part-time work, further confirms System application and effectiveness with diverse kinds of users. While these pilot tests are not conclusive, results help delineate and specify effects of different settings or conditions on System use outcomes. As CIS expressly moves toward working with social agencies, continuing experimentation contributes further elaboration and detail to the firm base of full scale evaluative data, thus expanding CIS ability to effectively adapt the System to varying agency conditions and needs.

A complementary impact has been created through provision of occupational and labor market information to program planners. The Manpower Information Clearinghouse, the Career Information System's special effort to assist planners, has established contact with a large number of data-producing agencies, whose information is used by all portions of CIS. MIC has worked to obtain, on a regular basis, notification of the pending or recent release of manpower studies from data-producing agencies. Publication and dissemination of Oregon Manpower Studies, an annotated bibliography of current reports and

studies having significance to the Oregon labor market, has resulted in a better response from data-producing agencies, but personal requests to some agencies are still necessary prior to new issues. A recent telephone survey reveals that the bibliography has been received favorably and sometimes enthusiastically.

Requests for planning information have come from representatives of a variety of agencies, educational and non-educational, although most questions were related directly to training programs. Since most requests are made by persons unfamiliar with labor market data, a considerable amount of time is spent helping users specify needs and shape research design. A standard research design has been developed which is applicable to many requests. Formats for responding range from telephone calls or letters to written reports. Users consistently have expressed satisfaction with the information supplied and a number of program decisions have been based on MIC findings.

A major goal of CIS has been development of the System in such a way that it can be sustained in the long run by the institutions it serves. During Phases I and II, development costs have been high and continuing experimentation with ways of achieving efficiency in production have not yet produced full economies of scale. It is estimated the System will reach 25,000 to 30,000 students during 1972-73 school year, about 15 percent of Oregon's secondary and higher education population. For 1973-74, commitments to date indicate an estimated 100,000 students will use it. The CIS Board has established a pricing schedule for user institutional support to CIS which does not include the operating costs of the delivery system. These operating costs are borne by the user institutions. CIS has surpassed its pledged local support for Phase II, and it is likely to reach three-fourths user support within one additional year. Since the Manpower Information Clearinghouse services to program planners are a pilot project no charges to users were made.

Overall CIS has demonstrated during the first two phases of development that a complete information system can be built by supplementing existing research and service activities with an integrated information delivery system. Within Oregon, these services have had a significant impact which will continue as CIS moves into its expansion phase. Then, much more pronounced and widespread effects will be discernible.

Chapter II

INTRODUCTION

BACKGROUND

Origins of Project

The concept of an occupational information system that could effectively serve students and clients in a variety of Oregon settings was developed by several people in the state long before the Career Information System was actually begun. As early as 1960, Franklin Zeran from Oregon State University discussed the need for some type of coordinated management of information between the various agencies in the state directly concerned with the production and dissemination of occupational information. However, it was not until representatives from the Oregon State Employment Division, the Oregon Board of Education, Oregon State University, the University of Oregon, and the Lane Intermediate Education District began to explore solutions to this need in the Fall of 1969 that something concrete took place. At the meeting the discussion topic centered on a demonstration by representatives from the 3M Corporation of VIEW, a microfilm format for storage of occupational information. Ironically, the VIEW system was not the delivery vehicle later endorsed by this group. However, this meeting did stimulate discussion of practical delivery devices and led to the establishment of a group with a sense of common commitment.[1] As a result of this

[1] Early planners of the Oregon Career Information System included:

Dr. Cas Heilman, then Professor of Career Education at Oregon State University;

Dr. Kenneth Hills, then Director of Student Services at the Oregon Board of Education;

Mr. Paul Kerr, State Supervisor of Technical Development and Analysis in the Oregon Employment Service;

Mr. William Manley, Director of Career Education for the Lane Intermediate Education District;

Dr. Bruce McKinlay, Research Associate in the Bureau of Governmental Research at the University of Oregon;

Mr. Thomas Williams, Career Education Specialist at the Oregon Board of Education; and

Dr. Franklin Zeran, then Professor and former Dean in the School of Education at Oregon State University.

meeting it became apparent that strong cooperating relationships between agencies needed a formula and unified effort if such a statewide program was to be successful. The group continued to meet at regular intervals during the next few months. Their discussions led to a thorough review of the components and feasibility of a career information system including such factors as information development, delivery devices, in-service training, location, staffing and resources for funding.

As this nucleus of people from various state agencies continued their discussions, it was recognized that governmental agencies and, to some extend private firms, produced a great deal of useful information, but the best of it is rarely prepared for use by students, counselees, and job seekers. It was concluded that a most serious obstacle in getting such information to students, job seekers, and others was the lack of effective data gathering and dissemination systems.

One of the important resources at the group's disposal was a project of the U.S. Employment Service, the Oregon Employment Division, and the University of Oregon involving work on an innovative information delivery system entitled Occupational Information Access System (OIAS). The OIAS project was funded by the U.S. Labor Department in September of 1969 to design and field test a model labor market information delivery system.

Problems and Emerging Resources

The need for occupational information had spurred the Oregon Employment Division to undertake an extensive program of area skill surveys in the early and mid-1960's, some of which contained substantial advances in both research methodology and delivery format. Experience with those studies led to an appreciation of the potential value of the information to people engaged in career and training program planning. The level of utilization was low, however, and it became apparent that tabular format and lack of occupational supply information were serious shortcomings and partly responsible.

In 1967 the Employment Service planned the first updating of an area skill survey, the 1967 Lane County Labor Skill Survey. That study was significant for two other reasons as well. The format of this study was drastically revised so that it contained a collection of nearly 200 occupational briefs written in a non-technical style. The study contained a variety of localized data including for the first time complete information on occupational supply as well as demand. The

supply information was developed following a methodology entitled Forecasting Occupational Supply, developed under a Manpower Administration contract.[2]

The 1967 Lane County Labor Skill Survey was published in the early months of 1969. It was fairly well received by counselors and program planners in the schools and social agencies during the months following its release, but it did not receive the sustained attention that its innovative and carefully prepared format deserved. This time, though, the problems limiting its use were different. Waiting until all the occupational briefs were written before publishing them together in one volume resulted in a fairly long time span between data collection and publication. Some users undoubtedly concluded that the information was out of date by the time they received it. While this was certainly an over-reaction, since only a few information items have such a short useful life, it was understandable.

Finally, use of occupational information in career planning was impeded by the absence of any mechanism available to the average user to help him identify occupations for further examination. Without a device that would permit a person to use available information about interests, abilities, preferences and needs, users would continue to be guided by status considerations, race and family background, and other limiting associations.

It was apparent that a delivery system capable of handling new information as it becomes available and meeting the other needs of individuals was needed. The delivery system itself should be attractive to users. The information format should be oriented to career planners, readable, and not highly technical. Analysis of an occupation should be thorough, including both demand/supply considerations. The delivery system should be capable of frequent updating. Finally, some method should be included to assist users in selecting occupations for exploration.

Significant Institutions

Schools are ports of entry to career success or career failures, yet seldom is there a school with a clearly defined career guidance program effectively meeting student needs. More often the development of the career guidance program has been delegated to a counselor who has neither the time nor the individual expertise to bring about an effective program; or career guidance is frequently thought of by the school's staff and administration as the "Career Day" that happens once a year. Too often students' understandings of careers, as well as their choices and pursuits of careers, are left to chance. Rare indeed is the school

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[2]Bruce McKinlay and Lowell E. Johnson, Forecasting Occupational Supply: A Methodological Handbook, Technical Report Number 4, Manpower Research Project, State of Oregon Employment Division, February 1969.

where the administration, counselors, teachers and parents work together to discover the career needs and decision-making competencies of their students and bring this knowledge to bear upon their own functional relationships with them.

Social agencies and their counselors face similar problems in assembling and using relevant career information. Counselors' limited time and training in this area often result in inadequate occupational information systems. This is a particular problem because of the great diversity of client information needs which include the wide range of occupations, the depth of information regarding each occupation, and the readiness of the client for the information. Some system for bringing together the disjointed pieces of information was sorely needed.

The integration of appropriate systems of dissemination with an agency's or school's planned career guidance approach was seen as vital. Too often, cabinet files filled with career briefs, shelved copies of the Occupational Outlook Handbook, or career films and tapes can be found in storerooms and closets awaiting discovery by only the ambitious.

Components of practical delivery systems were now available to schools and social agencies where the use of such information is critical for student and client decision making. What was needed was organizational effort to implement these systems and staff to insure that accurate and timely information was disseminated. Each in the group realized that the time was at hand for Oregon to make its move in this direction, yet no single organization had the expertise or financial resources to handle the job alone. Each felt that he could obtain the commitment from his particular agency or organization to join in supporting a model system for delivering occupational information.

Goals of the Project

By the spring of 1970 the group was determined to develop a proposal that clearly outlined the goals for establishing a Career Information System for the state. They proposed that the Career Information System should be a model inter-agency consortium which would provide practical means of direct access to current career and labor market information; such information should be presented in forms which are meaningful to individual students and clients and integrated into schools and social agencies in the state. The proposal stated the following goals:

1) Finance the formation of an inter-agency Career Information System for the collection, packaging, and dissemination of career information.

2) Develop information in an array of media and formats reflecting differing needs of individuals and resources of agencies.

3) Manage various information access systems.

4) Provide systems engineering services to schools and social agencies such as the Employment Division, Vocational Rehabilitation, and Public Welfare throughout the state. Such services would help individual schools and agencies select appropriate information and delivery components for a functioning system.

5) Provide consultant services to help individual school and agency staff members integrate occupational information into on-going instructional, planning and counseling functions.

6) Provide pre-service and in-service training opportunities for present and potential school and agency staff.

7) Field test organizational and financial arrangements of the CIS program prior to expansion throughout the state.

8) Evaluate the efficiency of the CIS operations and the effectiveness of the disseminated information in improving student and client career decisions.

Throughout the planning stage it was recognized that new and attractive delivery vehicles would be used, but that valid information content was to be the real heart of the system, and effective implementation was essential.

Specific Information Needs

A review of the literature related to career decision making reveals the importance which prominent theoreticians place on current career information. Ginzberg pointed to the complexity of occupational decisions by stating:

> "If he (the client) could base his choice on but one element, such as his interest or capacities, without regard for the job market, the income structure, and the social prestige which attaches to different kinds of work, his choice would be simple and direct. However, a series of factors both internal and external affect his decision."[3]

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[3] Eli Ginzberg, "The Theory of Occupational Choice," The Development of Human Resources, (New York: McGraw-Hill, 1966) p. 47.

It is a recognized fact that the characteristics of the labor market is an important external factor in career choice. When the individual needs information about the labor market and he is unable to get that information himself, (or is not aware of his need for it), it is the counselor's responsibility to direct him to the exact information he requires. Peters and Hansen forthrightly state that, "Vocational guidance is implemented through the use of appropriate occupational information."[4]

Donald Super, one of the most highly regarded of the career development theorists, lists "possession of information concerning the preferred occupations" as a necessary part of the vocational developmental tasks of crystallization and specification.[5] He also identified information and planning about the preferred occupation as essential dimensions of vocational maturity.[6]

Leona Tyler notes that occupational information serves at least two major purposes--occupational exploration and occupational selection. Tyler suggests films, field observations, and conversations with workers for a client engaged in occupational exploration. The exploratory use of occupational information, then, could be termed a "search for promising alternative courses of action."[7]

During the stage in which specification occurs, the ruling out of certain alternatives, the client needs information which is both more comprehensive and more specific. The task of the individual at this stage is to vividly sense the life style he will be choosing if he selects a particular occupation; thus, his questions are more specific: "What are the prospects for placement once he gets out of school? Where would he be likely to live? How big is the income level? What are his chances for advancement?"[8]

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[4]Herman J. Peters and James C. Hansen, ed., Vocational Guidance and Career Development, (New York: MacMillan Co., 1966) p. 173.

[5]Samual H. Osipow, "Super's Developmental Self-Concept Theory of Vocational Behavior," Theories of Career Development, (New York: Appleton-Century-Crofts, 1968) pp. 124-125.

[6]Ibid., p. 129.

[7]Leona Tyler, The Work of the Counselor, (New York: Appleton-Century-Crofts, 1969) p. 119

[8]Ibid., p. 120.

JoAnn Harris has commented that it is often a problem to get persons in the exploratory stage to read occupational information.[9] The information appropriate to the process of exploration is general in nature, and is designed to stimulate further interest by opening new options for exploration.

Vocational Education Planning Requirements

Manpower data are required, both by law and by good planning method, for program and curriculum development. Even in areas where there is exceptionally good cooperation among agencies, there is inadequate exchange of manpower research. The reason is not a lack of willingness to cooperate, but a lack of any systematic clearing-house mechanism. There is also inadequate utilization of useful data from the census, manpower studies, graduate follow-up studies, and other sources.

School administrators and curriculum coordinators must seek specific information on the present and projective supply and demand for workers in individual occupations or clusters of occupations as well as relate this information to specific curricular decisions. The CIS was seen as a model which would provide practical means of direct access to such meaningful and useful career and labor market information.

Accurate up-to-date occupational information is essential for many kinds of training and program planning. MDTA, WIN, and other manpower programs require that there be reasonable expectation of employment for graduates; high school, post-secondary, and on-the-job training are likewise intended to prepare graduates for actual manpower needs. A CIS could substantially improve the flow of essential program planning data from data producing agencies to program planners in social agencies and educational institutions.

Information from the CIS could be useful as curriculum materials in occupational and other educational programs. Access to usable occupational information is now extremely difficult for individual instructors, and a central source such as the CIS would improve their chances of finding and using the information they need.

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[9]JoAnn Harris, "The Computerization of Vocational Information," Vocational Guidance Quarterly, September 1968, p. 12.

The Oregon Board of Education is vitally interested in making education relevant to the life interests and needs of students. Strong emphasis is placed on preparing each student for the world of work. In a recent publication, The Oregon Board of Education points directly to one of its projected activities for public schools as being:

> "Continuously updating catalogues of occupational information materials (films, filmstrips, etc.) which will help teachers in every subject field relate classroom instruction to the world of work."[10]

Delivery of Labor Market Information to Clients

With the current emphasis on career preparation in school curricula, it is imperative that provision be made for ample opportunities for students to explore the technical requirements, working conditions, and political and social responsibilities of each of the career families open to them. The "Career Cluster" curriculum must be tied to practical sources where students can acquire accurate and current information to assist them in their exploration. In addition, the rapidly growing career exploration courses now being introduced on many college campuses, have a common element, information.

Many agencies would have their particular type of application to serve their clients. The Oregon Employment Division and the Vocational Rehabilitation Division have continuing programs and major responsibilities which could be serviced by the CIS. Many manpower programs such as WIN, CEP, NYC and others would also benefit from ready access to reliable occupational information.

Career information that is current and offers practical accessibility are the vital elements that can be offered by a service agency such as the Career Information System. An equally important element to be offered by the CIS is assistance to a school or agency in integrating information into formulating a career guidance approach which is consistent with the needs of their students and clients. Conceivably every school and college in the state would be a potential user of its services.

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[10]Leonard E. Kunzman, "Career Education in Oregon," Oregon State Board of Education, 1970, p. 4.

Expected Geographic Coverage of the Project

As the project was conceived, the CIS would have the capability of collecting and disseminating career information throughout the state of Oregon. Such coverage created a number of questions that needed to be dealt with: (1) how can the labor market information be regionalized within the state? (2) what formats for the occupational information will be appropriate for the various student and client clientele? (3) what types of delivery systems will need to be developed to serve the entire state? (4) how can the sparsely populated areas of the state be serviced economically? These and other questions were on the minds of the people who were seeing the CIS develop as a statewide organization.

School population to be reached. This project attempts to help fulfill a basic function in the career development of students moving through Oregon school systems, by supplying them with current occupational information for personal decision-making. The career development theoreticians have written about this basic function, school counselors have talked about it, and the public is now asking for this kind of service. Each would agree that most students go through an exploratory stage of development in which career choices are tentative. Through this period (grades 7 or 8 to post high school for many), the information appropriate to this process of exploration is general in nature, and should be designed to stimulate interest by opening new options for further explorations.

These facts suggest that the school population that could be served by the CIS would include junior and senior high schools in the state as well as a number of post-high school institutions (community colleges, public and private four-year institutions, and private vocational and technical schools). It was thought that the multi-media approach would provide sufficient flexibility to satisfy a significant range of differing student information needs. The actual number of students included in this group could run as high as a quarter-million.

Social agency population to be reached. Social agencies in the state have their particular types of applications for occupational information, but many are potential users of the CIS service. A number of social service projects, not all of which have employment as a major goal, find career information of the type available through CIS highly useful. Larger state agencies such as the Oregon Employment Division and the Vocational Rehabilitation Division have continuing programs and major responsibilities that could utilize stimulating career information with their clients. It is a goal of CIS to explore these needs with the agencies involved and to discover thereby what assistance CIS could provide. If cooperating relationships can be established with the major social agencies in the state, it is highly

probable that many thousands of their clients could be supplied inexpensively and adequately with current occupational information for their career decision making.

Need For and Extent of Agency Support of Goals

Support for the concept and goals of a statewide organization to supply occupational information came from local schools, state agencies and members of the planning committee who represented several state and local agencies. Reasons for preferring an inter-agency effort are numerous. To begin with, much of the data on which career planning information must be based comes from existing agencies, though not from any single agency. Many produce various kinds of data, and all must be involved in one way or another in making their data available. At the other end of the continuum, existing agencies, both state and local, have the established contacts and service delivery systems through which career information should flow if it is to be of maximum usefulness to individuals. Thus, population serving agencies are an essential link and should be part of the career information delivery system. Many of these same organizations have career education or manpower program responsibilities which can themselves benefit from readily available occupational information. Finally, there is the practical fact that no single agency has the skill or financial resources to provide this comprehensive service unilaterally. An effective system, therefore, requires the information sources, access to clients, expertise and financial backing of a variety of education and social service institutions.

There was common commitment among these planning group members and full awareness that such an undertaking would require an uncommon degree of cooperation. It would, in fact, require large and forceful state bureaucracies to lay aside some traditional defenses and share openly from their talent and resources.

Letters of endorsement for the CIS concept and proposal were received by the committee from key state agencies and from the county and local levels. Each pledged full support of his organization for the concept and endorsed its goals.

Ross Morgan, Employment Division Administrator, said,

> "There is no doubt in my mind but that much more must be done to develop disseminate, and utilize occupational information for Oregon's students and workers. The proposed CIS could prove to become an effective means for achieving such a goal.

Those of you who are involved in the development of a CIS can be assured that the Employment Division will energetically cooperate. We look forward to discussing specific areas in which we may participate."

The Employment Division's Deputy Administrator, Eldon Cone, added,

"We are pleased to have this opportunity to be working through the Provisional Board of Directors of the Career Information System, with the Oregon Board of Education, Oregon State University, the University of Oregon, and the Lane County Intermediate Education District."

"You may be assured, then, of our complete cooperation in the achievement of the CIS goals."

Speaking for the Oregon Board of Education, Jesse Fasold, the Deputy Superintendent, made the following commitments,

"We are extremely pleased with the concept demonstrated by this committee in the overall planning of this proposal bringing together a consortia of the various educational institutions, an intermediate education district office, the Employment Office, and our own opportunity as the Oregon Board of Education to cooperate in this endeavor.

You have our full support in this program..."

At the University of Oregon, Dean Norman Sundberg of the School of Community Service and Public Affairs said,

"The Career Information Service proposal which your group has developed is a good one. We recognize the need for such a service because we have been faced repeatedly with the need for better career information and better information dissemination methods in the development of the Wallace School of Community Service and Public Affairs and in other activities of the University. We heartily endorse the objective of the CIS and the concept of a coordinated, inter-institutional effort."

The support of local school districts is reported by William Jones, Superintendent of the Lane Intermediate Education District.

"The Lane County Superintendents' Advisory Committee on Career Education received the proposal of the Career

Information System at their February 3, 1971 monthly meeting. After considerable discussion about the concept of a statewide career information dissemination network, it was unanimously agreed to endorse the project.

Furthermore, upon recommendation by the Superintendents' Advisory Committee, the Lane County superintendents as a whole endorsed the project as having significant implications in providing meaningful career information to students in Lane County as well as the state."

Despite all good intentions, the successful implementation of cooperative arrangements is probably the exception rather than the rule, requiring, as it does, both effort and flexibility at many organizational levels. The Career Information System's first steps toward complete cooperation have not always gone smoothly, but the demonstrable benefit, both to the agencies and to the clients, together with the representative structure of the CIS Board have kept this early commitment to cooperation very much alive in CIS during its early stages.

ORGANIZATIONAL STRUCTURE AND FUNCTION

Evolution of CIS Board of Directors

As previously described, the original group who met to discuss the merits and feasibility of the CIS concept and who were to later form the nucleus of the CIS Board of Directors, were all representatives from state and local agencies. Collectively, their backgrounds represented knowledge and experience in the collection and analysis of career and labor market information, the development of delivery systems for occupational information, curriculum development, and the integration of career information in the decision-making process. A critical concern of each was the need for a service to help develop effective career guidance programs as well as to develop dynamic systems for compiling and disseminating career information. Their enthusiasm and commitment toward the CIS concept was due in large part to the potential effect they saw resulting from the unification of effort and multi-agency cooperation such a project would produce.

This planning group continued to meet as a statewide committee representing the Oregon Board of Education, Oregon Employment Division, Oregon State University, University of Oregon, Lane Intermediate Education District, and secondary schools during the formulation and negotiation of a proposal for a continuing career

information system for the state, which would package and disseminate occupational information through effective information systems such as the Occupational Information Access System and would facilitate the integration of such information into ongoing counseling and instructional programs.

That proposal, submitted by the Oregon Employment Division to the U.S. Department of Labor, Manpower Administration in early February of 1971, outlined the formulation of a formal Board of Directors representing a broad base of contact throughout the state of Oregon. Most of the personnel named as Board members were members of the original discussion and planning committee.

Initial funding for the CIS was provided during the third quarter of 1971 by the Manpower Administrator's Office of Research and Development and the U.S. Employment Service. The Board met for the first time as a formal decision-making body during that quarter to select a Director of the Project, formulate a constitution, and elect a chairman of the Board. Since that time, chairmanship of the Board has changed once and there have been six changes in Board membership.

The Board has developed and formalized a number of policy statements consisting of operating policy that assist the Director and CIS staff in the daily routine. Policies formalized by the Board cover such topics as pricing schedules, consortium membership, Director's authority to spend, establishment of user agencies and standards of use for occupational information delivery system usage.

Structure and Function of CIS Board

The Board constitution not only established its goals and objectives but set up the new consortium's organizational structure and working relationships.

Membership in the consortium is by formal invitation and is extended to representatives from secondary and higher educational institutions, social service agencies, CIS user agencies, or other persons designated by the Board as appropriate. Policies are established for the selection, nomination, election, and tenure of Board members.

Provisions are outlined for the election and terms for Board officers. The formal relationships between the Board of Directors and the CIS staff are clearly established. (See Appendix A for a copy of the CIS Constitution.)

Although a formal committee structure was not provided in the CIS Constitution, provision was made to establish committees deemed appropriate from the Board's membership and from personnel in user agencies. Such ad hoc committee procedures have effectively served the organizational and functional needs of the CIS Board during Phases I and II of the project. Precedent for ad-hoc committees had been established by this group prior to their formulation as a Board. An ad hoc committee to draft a working model of the constitution itself was an example of committee endeavors. This took place during the Fall of 1971. A selected subcommittee of the Board met several times to work out a constitution that was both flexible and sufficiently inclusive to serve Board needs. This subcommittee enlisted some consulting assistance on organizational structure from a University of Oregon professor who had particular expertise in this area. The results of the subcommittee work was largely accepted by the Board and ratified as their constitution.

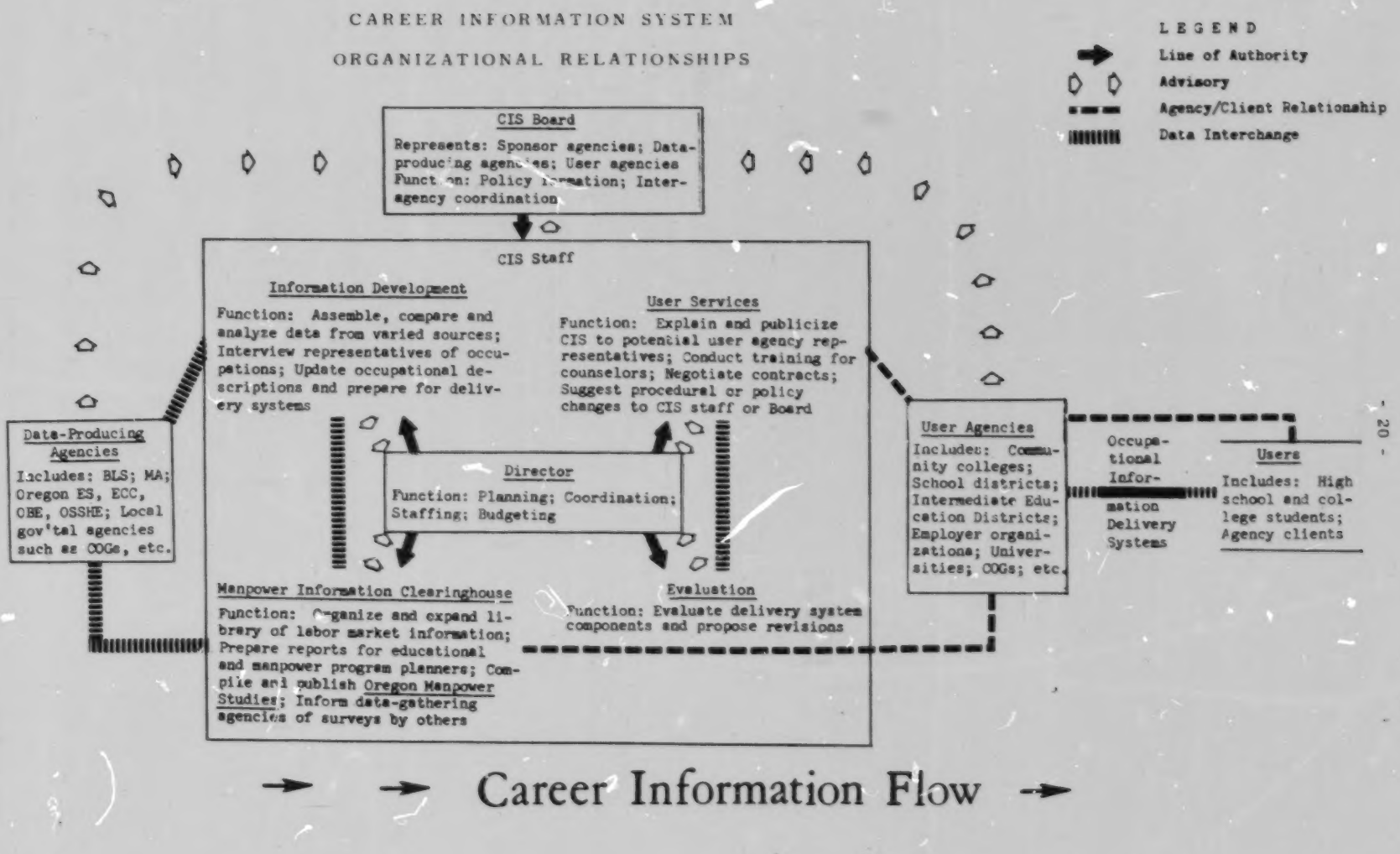
Another important ad hoc committee was established during the Fall of 1971 to draft a set of standards for use of the computerized system. The committee met and developed a set of standards which were presented to and approved by the Board. (For a copy of the standards, see Appendix B.)

Structure and Functions of CIS Staff

As originally conceived the CIS staff was organized to effectively carry out its major functions, i.e. compiling labor market data and facilitating the integration of career information into agency and school counseling and instructional programs.

A director was selected by the CIS Board to supervise the operations, provide leadership to the organization's activity, and serve as Board liaison. Under his direction, staff was selected to work directly in information collection and development, in consultation with schools and agencies, and as clerical and support personnel. The following chart of organizational relationships should serve to clarify the organizational structure and staff functions.

One limitation of a graphic representation such as this is the disproportionate sizes of the various blocks. CIS staff totals fewer than ten FTE, including secretarial and administrative staff and part-time research assistants. Thus, despite its size on the chart, it is really very small in relation to the sizes of data producing agencies or user agencies.


CAREER INFORMATION SYSTEM
ORGANIZATIONAL RELATIONSHIPS
LEGEND
Line of Authority
Advisory
Agency/Client Relationship
Data Interchange
CIS Board
Represents: Sponsor agencies; Data-producing agencies; User agencies
Function: Policy formation; Inter-agency coordination
CIS Staff
Information Development
Function: Assemble, compare and analyze data from varied sources; Interview representatives of occupations; Update occupational descriptions and prepare for delivery systems
User Services
Function: Explain and publicize CIS to potential user agency representatives; Conduct training for counselors; Negotiate contracts; Suggest procedural or policy changes to CIS staff or Board
Director
Function: Planning; Coordination; Staffing; Budgeting
Data-Producing Agencies
Includes: BLS; MA; Oregon ES, ECC, OBE, OSSHE; Local gov'tal agencies such as COGs, etc.
Manpower Information Clearinghouse
Function: Organize and expand library of labor market information; Prepare reports for educational and manpower program planners; Compile and publish Oregon Manpower Studies; Inform data-gathering agencies of surveys by others
Evaluation
Function: Evaluate delivery system components and propose revisions
User Agencies
Includes: Community colleges; School districts; Intermediate Education Districts; Employer organizations; Universities; COGs; etc.
Occupational Information Delivery Systems
Users
Includes: High school and college students; Agency clients
Career Information Flow

From the chart it is clear that definite provisions have been made for feedback from users. The functions within the CIS organization are clear and distinct, yet roles are flexible. Exchange of information between CIS and data-producing agencies can freely move both ways. The Board also receives feedback from both data-producing and user agencies as well as from the CIS staff. These organizational communication patterns coupled with the clarity of functions contribute to CIS maintaining an effective organizational role.

POPULATION SERVING AGENCIES

A major function of the CIS has been to develop strong working relationships with its user agencies (schools, colleges, and social agencies in the state).

Far more agencies have become involved with CIS in connection with career planning information than with program planning. These organizations have been involved with CIS in three general ways. The first group can be described as pilot sites, where the CIS services have been demonstrated to agency and school personnel. Although the length of time for demonstration has varied, this practice has allowed the agency personnel first-hand observation of the System with their particular clients. With this experience, they are better able to decide upon the appropriate services for their clients' needs.

A second type of user agency might best be described as an experimental site. In this instance, a site was usually selected because of its unique setting or for its unusual clientele, thus providing CIS the opportunity to conduct research with particular populations of clients.

The third group has consisted of schools and agencies throughout the state who have become financial supporters of CIS and utilize its services with its students or clients. It is this group of agencies and schools that has grown substantially during Phase II of the project's development and who will eventually determine its future.

Division of Responsibility Among CIS and User Agencies

Regardless of the particular type of agency, pilot demonstration, experimental site, or financial supporter, the specific responsibilities of each need to be clearly defined and communicated.

The CIS has taken full responsibility for providing such services as the development and maintenance of the occupational and educational

information files, producing the occupational interview cassettes, and making changes to the QUEST program.

Cooperatively, the CIS and user agencies have developed format and methodology for in-services and follow-up services. Although the CIS has developed the format of printed materials (i.e. user handbooks, bibliography, etc.) the functions of printing and distribution have been shared. A good deal of the evaluation has also been cooperative endeavors. Such a model of cooperation between CIS and its users not only carries out the spirit of the project but adds to a deeper commitment by both. It has been very apparent on several occasions that cooperation in a particular service has resulted in a significant financial advantage to both CIS and the user agency. A case in point is the printing and distribution of user handbooks in the Portland metropolitan area. CIS and the intermediate education district serving that area have developed a plan whereby CIS develops the handbook's correct format, and the district, at its own shop, prints, collates, and distributes the handbooks to users in the area in adequate quantities to meet the need.

The user agencies have some specific responsibilities too. First, they agree to distribute and use the materials and programs of the System as they have been directed during the in-service training. They agree to communicate with the CIS on problems they may encounter in the use of the System or suggestions that they may have for its improvement. In the case of schools and agencies that are financial supporters of CIS services, they take responsibility for the necessary budgetary and invoicing procedures to insure payment.

Strategies for Bringing About Involvement of User Agencies

As mentioned on a previous page, user agencies have tended to fall within three categories, pilot, experimental, and ones who are financially supporting CIS. The pilot schools or agencies have been closely linked with those who eventually support financially the activities of CIS. Generally, it has proven effective to select as a pilot site, a school or agency where the CIS services can be demonstrated effectively. Selecting such pilot sites involves all or part of the following criteria: (1) commitment to the CIS concept and interest in giving its services a fair trial in the pilot setting; (2) located in or near other potential users of the System; (3) agreement that other potential users will be invited to observe the System in action. This type of pilot use of the System usually has a specific time period. Most usage of this type takes a few hours, a week and sometimes as long as a month's trial. Usually CIS absorbs all expenses for such a demonstration. An exception was the selection

of 14 pilot schools during the Fall of 1972 in the Portland metropolitan area. The 14 schools were selected from a number who volunteered to be pilot sites. Each committed school personnel and facilities to make this seven-month demonstration as effective as possible. Although at this time of writing the time period is not complete, several substantial outcomes are visible. First, all pilot schools appear to have the System in full operation and are working on integrating it into their instructional and counseling programs. Secondly, due to the awareness and interest of surrounding schools, there is financial commitment from school districts in three counties (Portland metropolitan area) to CIS for the 1973-74 school year. Such financial support would extend CIS services to an additional 30,000 to 35,000 students in this area next year.

It is important for the CIS to constantly evaluate the effectiveness of its services, especially with client groups with which it may not have been previously exposed. This type of experimentation not only serves to keep CIS responsive, but opens new avenues for the use of its services. In a pluralistic society new communication methods are needed. In agencies as well as schools, better ways of communicating must be developed. The fact that CIS appears quite innovative to some is itself an advantage in this effort.

Agreements With User Agencies

It is very important to the user agency as well as to CIS that communication concerning the System be clear and understandable. To assist in this process, the CIS's Board of Directors established in 1971 a "Standards for Use" document (See Appendix B) that covers most of the circumstances in which a user agency might find itself. Regardless of the length of the use of the System, these standards communicate what are authorized and unauthorized practices and procedures. School and agency personnel are fully informed as to the content of the Standards and agree to following them in using the System. To date, no one has found the Standards overly restrictive or too complicated.

In addition, the CIS writes a service agreement (See Appendix C) with each agency or school who is contracting for its services. This agreement outlines fully the responsibilities of both the CIS and the user. Having administrative staff from both sign this agreement and having it ratified by the CIS Board, fully informs all parties of their rights and obligations. It is desirable that this agreement be completed prior to the time the System becomes operational in an agency.

Population serving agencies constitute one of the essential links in the career information dissemination system being built in Oregon, for those agencies are the principal institutions through which individuals obtain information for their career planning. Many of those same agencies have substantial program planning responsibilities, also, and CIS can be of assistance by facilitating their access to information for use in their program planning activities. The preceding discussion has emphasized the relationship between CIS and these agencies because both financial and program responsibilities rest on those relationships and because there is less consultation with agency staff than is the case with program planning. Most arrangements with regard to program planning assistance have been rather informal to date, have involved frequent discussion of progress, and in general have been more in the nature of experimental than any other kind of relationships. When CIS program planning services move from an experimental to a regular service, arrangements with users will become more formalized and standardized.

ARRANGEMENTS WITH DATA PRODUCING AGENCIES

An important design feature of the Career Information System is its information development capability. CIS is committed to the concept of filling its delivery system with current, valid and useful information. However, it does not follow that CIS should establish a large data gathering capability. Indeed, the project was conceived in part out of recognition that a great deal of existing information goes unutilized because of the absence of effective collection and delivery systems. What was needed was a thorough and reliable system for obtaining the data output of other organizations.

As a result the Career Information System has expended considerable effort in order to fulfill the operating principle "that CIS will make maximum use of existing data resources in preparing the information components of the delivery system before initiating the collection of new data." Major efforts have been undertaken to establish working relationships with the Oregon Employment Division, the U.S. Employment Service, the U.S. Bureau of Labor Statistics, as well as other organizations, and considerable communication and exchange of information has taken place. The strategy of relying on existing resources still seems to be supported by several advantages, although the costs and time required to formulate such agreements and implement working relationships were under-estimated. Perhaps this difficulty illustrates the need for an organization like CIS. Pertinent data sources are identified only from extensive experience, and information flows to users only with a substantial continued effort

from those users, whether they be job applicants, or manpower information specialists. Job applicants and students rarely have that experience or effort to expend on data collection.

Three kinds of arrangements have been set up with data producing agencies. The arrangement involving the least amount of innovation is placement on a mailing list. Typically, this arrangement is used for receiving the standard publications, newsletters and information releases of agencies with already established mailing lists. This arrangement has been made with a large number of organizations such as the Employment Division, the Oregon Board of Education, Manpower Administration, the Bureau of Labor Statistics, and the Oregon Educational Coordinating Council. Less frequently, CIS has asked to be placed on mailing lists for information such as employee newsletters from the Employment Division and position descriptions from the Personnel Division of the State of Oregon not normally released to the public.

Another somewhat more innovative arrangement involves advance notice of forthcoming publications. Under this arrangement, a designated representative of the data-producing agency notifies CIS of the content of these publications. The designated representative also is available to answer questions that arise and act as liaison between organizations. Such an arrangement has been established with the Occupational Outlook Section of the Bureau of Labor Statistics.

This arrangement with B.L.S. originated at the American Vocational Association convention in Portland where Mr. Shadbolt of CIS heard Neal Rosenthal of the Division of Occupational Outlook explain that the material contained in the handbook is at least 16 months old and typically older before users receive it. He indicated his interest in finding alternative ways of delivering information. After the meeting, Mr. Shadbolt spoke with Mr. Rosenthal about the feasibility of receiving research findings as they are developed, e.g. copies of the galley proofs. Mr. Rosenthal seemed interested.

These contacts have resulted in correspondence being set up between the Division of Occupational Outlook and the CIS. We have received quarterly notices from Division notifying us of upcoming publications. We have also established a contact with Mr. Donald Dillon, Research Assistant with the Division.

The personal contact has probably been most helpful. On several occasions, we were able to gain quickly information about methodologies used by B.L.S. The quarterly notices have been of limited value, in that it only notifies us of publications that we might

miss or only tardily become aware of. However, we were already on the B.L.S. mailing list as well as the Superintendent of Documents mailing list of publications released by the Government Printing Office. These channels of information are as complete, if somewhat slower than, the quarterly letters.

The third arrangement is the most innovative. Under this type, CIS arranges to exchange information with data-producing agencies. Typically, the exchange is initiated when one organization contacts the other, usually for information that is already available or can be provided with limited additional effort.

This sort of arrangement is fairly descriptive of the understanding CIS has worked out with the Oregon Employment Division. Basically, CIS submits occupational descriptions to the manpower economists as members of review panels. The manpower economist is asked to review generally the description and specifically the sections on wages, current employment and employment outlook. Manpower economists are not asked to develop information for the description, but if data are already available, they are encouraged to enclose it. In turn, the manpower economists are welcome to copy, use, and share the occupational descriptions and other information files, as well as program planning services, which they have done.

Again, though, the arrangements with the Employment Division are something less than was originally hoped for. Then it was envisioned that manpower economists would assume a more active role in the development of information in return for more extensive use by the Employment Division of CIS services. While this original design was planned and developed during a number of workshops, presentations, meetings and correspondence via letters and telephone, it culminated in a proposal presented at a meeting of Employment Division administrators and CIS staff members. A better understanding of the proposal can be gained by examining its content which is appended to this report. (See Appendix D.)

The effort undertaken to arrange a cooperative agreement with the OED has been the most extensive. While the effort has not yet produced a formal agreement, it most certainly cannot be considered a failure. Perhaps most importantly, the activities have served to inform the manpower economists about the mission and methods of CIS. This has resulted in a greater exchange of information between CIS research staff and the manpower economists. Several manpower economists have sent materials to CIS on an unsolicited basis. All have shown a willingness to help answer questions about their areas,

especially when it has not entailed extensive, additional research. Several have requested and used CIS career and program planning information in fulfilling their local office and community responsibilities.

It still seems that real advantages could be forthcoming from an even closer working relationship. Both organizations would benefit from a systematic processing of occupational data, much of which is already available. The availability of a set of current job descriptions, which could be developed cooperatively at lower cost than either organization could produce alone, would be valuable in meeting the demands placed on both organizations to provide this information. Short of a cooperative agreement, this information development will be more difficult and costly. As mentioned previously, it is true that manpower economists are quite willing to accept requests for information on an informal basis, especially when they do not involve extensive additional research over a period of time. However, the CIS needs for information sometimes go beyond these bounds even though the time requirements are not as great as might be expected.

A key element in developing a flow of information is identification of data-producing agencies. Early in Phase I, CIS developed a list of the major data-producing agencies. A list of these agencies is attached to this report. (Appendix E.) Obviously, there are thousands of other organizations such as professional and trade associations that produce some occupational information. No attempt has been made to include these groups except in a categorical manner. Since that time, CIS has tried to remain alert for other agencies that produce pertinent occupational data. A useful document in identifying some of these data sources has been An Index to Major Published Data Elements for Users of Labor Market Information, prepared by Authur Schwartz of the University of Michigan.[11] Of course, CIS is on the mailing list of information offices of the national and western regional offices of BLS and MA, the U.S. Government Printing Office, and of the Employment Division, Oregon Department of Human Resources among others.

Another important task is the identification of staff members in the data-producing agencies that are knowledgeable, accessible, and in a position to release the information. This is obviously less critical when all that is desired is placement on a mailing list.

When an agency does not publicize its research and the data output of the organization is still considered important, CIS takes steps to identify and monitor the research output. This has been done through meetings of representatives of data-producing agencies, the surveys of the Oregon Manpower Studies, and in the future through a systematic

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[11] Arthur R. Schwartz, An Index to Major Published Data Elements, (Ann Arbor, Michigan: Institute of Labor and Industrial Relations, 1972).

telephone contact method. All of these methods, for example, have been helpful in identifying useful research output of the State Economic Development Division which includes CIS on its mailing list for some publications, but not all.

Cooperative agreements and agency monitoring systems are implemented to overcome some of the problems involved in maintaining a data flow. Conceptually, the problems involve either cost or confidentiality considerations.

Where confidentiality of information is not an issue, cost considerations usually determine the kind of arrangement. When an agency publishes something for the public that is of broad public interest, typically it will establish a mailing list as a means of distribution. Because the additional expense of adding another name to the list is inconsequential, there is no problem in obtaining the data. Even though the total cost of the publication and mailing may be substantial, the marginal cost of another name is very low.

However, when an agency compiles a data series which it is not accustomed to releasing to the public, either because of limited interest or absence of mailing list, it is often more difficult to obtain the data. Often times, it is possible to arrange a special mailing, but this is more difficult and less reliable when the data output is ongoing, and the mailing requires more than a one-time commitment. Here the marginal costs of mailing may be quite a bit greater than in the first instance.

More difficult is the situation where CIS needs the information of an agency that is not already processed or prepared for public release. Potentially there is a great deal of this information within agencies like Employment Division, Economic Development Division, and the Oregon Board of Education. Since data processing and preparation are potentially high cost items, agencies are naturally hesitant to commit themselves. Here the marginal cost of processing and mailing can be quite high indeed. Agencies may be more responsive if financial reimbursement is offered, but this is sometimes complicated by bookkeeping systems. For example, discussions with the Personnel Division of the State of Oregon indicate that financial reimbursement would be the only basis on which they would supply CIS with a position classification plan. Service agreements where CIS exchanges its information output for the requested information can be negotiated but this is feasible only if the agency has a need for CIS services. The understanding with the Employment Division, although not highly formalized, resembles closely this arrangement.

Confidentiality is another factor which sometimes interferes with the exchange of information between agencies. This problem is less amenable to solution unless CIS can meet the requirements for data release or the data gathering agency can be persuaded to convert the data into a format that avoids the confidentiality conflict. This latter solution, of course, incurs additional costs which must be satisfied in some way. Fortunately this has not been a serious problem for CIS.

Finally, arrangements for the exchange of information between most agencies requires a considerable amount of management from the recipient organization. This conclusion is unavoidable and was agreed to strongly at a meeting of representatives of data-producing agencies. Very few agencies have designed and perfected good systems for notifying the public and disseminating information about useful research. As emphasized earlier, there is a need to identify agencies responsible for developing the necessary information. Furthermore, there is a need to assess the value of information sources and determine strategies for obtaining worthwhile information. This requires individuals with a combination of technical expertise and time and energy to do the work.

In conclusion, the development of linkages with other organizations was a strategic decision for CIS which seemed to be supported by the facts at the time the proposal was written. The costs of data development, the non-availability of certain information, and the reciprocal benefits to cooperating agencies like the Employment Division and Occupational Outlook Section of BLS all seemed to point in this direction. On the other hand, this strategy has its limitations. It cannot be forgotten nor underestimated that cooperative agreements take time to negotiate. Furthermore, control of the research effort becomes more difficult when it is performed by workers with loyalties to separate organizations.

The agreements arranged with the Oregon Employment Division, Bureau of Labor Statistics, other Federal, State and Local governmental bodies as well as private organizations such as professional and trade associations have produced a flow of standard publications as well as sources of relatively unprocessed information. In addition, knowledgeable persons in the community have been contacted by mail and telephone, and other inexpensive sources, such as "Help Wanted" advertisements, JBOS statistics, and data provided by bodies like licensing boards have been used.

SUMMARY

Realization of the need for coordinated management of occupational information antedated the formation of the Career Information System. When representatives from data-producing and occupational information-using agencies began to assess the need and possibilities of responding to it, several factors converged to make CIS a reality. The Oregon Employment Division was involved in substantial occupational labor market research; the Oregon Board of Education was developing a major career education thrust, and the Occupational Information Access System was proving an effective means of delivering occupational information to individuals involved in occupational exploration and career decision-making. These factors and the unified commitment of the group of agency representatives eventually resulted in a proposal for establishment of the Career Information System as a model interagency consortium with the purpose of providing direct access to current career and labor market information in forms meaningful to students and clients and integrated into schools and social agencies in the state. With essential endorsements and pledges of cooperation from the heads of pertinent state agencies and local organizations, the Career Information System was established under the authority of a Board and a staff was organized to compile labor market data and facilitate the integration of career information into agency and school counseling and instructional programs. CIS has developed strong working relationships with its user agencies entering with them into formal agreements which clearly communicate the specific responsibilities of each; it has involved these user agencies in continued development of the CIS function and has specified and obtained agreement on "Standards for Use" of the System. Regarding data-producing agencies, CIS has put forth major efforts to establish working relationships with the Oregon Employment Division, the U.S. Employment Service, the U.S. Bureau of Labor Statistics and other organizations. CIS has used all the regular sources of data as well as a host of relatively unprocessed sources of data to fultill its function. During the first two phases of development, CIS has substantiated that a complete information system can be built by supplementing existing research and service activities with an integrated information delivery system.

CHAPTER III

INFORMATION DEVELOPMENT

The creation of an information system involves several discrete tasks. The selection of topics, production of information, the design of a delivery system and implementation of the system into user agencies are some of the challenging problems capable of standing by themselves. No less important is the problem of developing information to fill the system.

CIS represents a major effort to implement effective systems both with regard to information development and information delivery. Neither is an easy undertaking; taken together they present an even greater assignment. But they cannot be taken separately because they are complementary features of a single system; neither is functional alone. Unused information is of no consequence; an empty delivery system is a meaningless exercise. Thus CIS has undertaken to utilize available resources to build a system for the development, updating, and delivery of occupational information. This chapter describes the heart of that system, the system for developing accurate, current, and localized occupational information.

The original Career Information System proposal is quite explicit in pointing the way for development of a systematic information updating design.

> The sources and process for the collection of career and labor market data will be established. The Employment Division will change its present work procedures to enable its staff to effectively collect and organize the multiplicity of materials subject to use by the CIC. Any special preparation of materials or unusual types of surveys which require a significant increase in agency resources will be contracted for by the CIC. (The placing of interns into the Employment Division and other Institutions will be considered.) Other sources of usable information will also be developed. Analyzing the data and sorting it into usable information components for dissemination will become an established process.[1]

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[1] Proposal for a Career Information Center for Oregon, May 1971, p. 28.

Of course, the Career Information System could have placed more emphasis on production and less on a systematic information development design. However, the development of systematic research methods seemed the best assurance of maintaining high levels of information quantity and quality. Furthermore, uniformly high standards over time are more likely with regular research procedures than with occasional "ad hoc" efforts.

The above paragraph extracted from the project proposal refers to two key elements of information development--sources and process. Stripped to its barest essentials, the development of information is simply a matter of obtaining data and preparing the conclusions. Of these two elements, obtaining information is the more complicated and expensive process. Therefore, organizations intent upon producing occupational information must solve the problem of obtaining data--the raw material. The CIS strategy of utilizing existing data-producing organizations and resources was discussed in Chapter II. The role of these sources will be further discussed in this chapter along with information processing procedures used by CIS staff.

This chapter, like others, will attempt to show the ways in which CIS has worked toward building a system from good but inadequately integrated components with particular emphasis on the information processing procedures devised by CIS.

ECONOMICS OF INFORMATION DEVELOPMENT

A presentation of how the CIS information development mechanism operates would be incomplete without a discussion of the rationale upon which it is built. How many occupations should one include in such a system? Upon what basis does one decide what elements of labor market information to emphasize? Were CIS's decisions in this area rational or merely specious? These are discussed in the following paragraphs.

The development of labor market information is more than hiring a labor market analyst, just as effective counseling services require more than just hiring counselors. There are distinct cost considerations with regard both to the number of occupations and number of information items to be developed, as well as extent of localizing, sophistication of storage and retrieval systems, and frequency of updating. It is useful, therefore, to consider some of the economic characteristics of labor market information.

Information is itself a product, is costly to produce, and is unevenly consumed by suppliers of labor. Further, information on some occupations and topics is more costly than others, and

information for some items and occupations is more strongly needed than for others.

Theoretically, for the same expenditure, it would be possible to produce a few units of information for many occupations or many units of information for few occupations. In between, a large number of combinations of information units and occupational cells could be produced.

Generally, CIS has attempted to provide information at a level of detail that is useful from a counseling standpoint as well as feasible from the standpoint of data collection. The Dictionary of Occupational Titles (D.O.T.) lists over 20,000 entries, including for example, over 30 distinct welding specialties. Broader grouping is more useful for occupational exploration and more consistent with present research capability. Therefore, as a result of grouping, a much smaller number of occupational titles can reasonably account for nearly all employment. (See Appendix J for the list of CIS occupations.)

Another aspect of information development concerns the units of information developed for each occupation. Costs for any information package size depends in part upon the particular items selected as units of information. Information which is generally considered essential in any occupational information program is usually available to some extent already (other data producers have also judged them essential); consequently it is least costly to collect. CIS experience indicates that economies of scale are realized up to 30 to 35 items per occupation. Beyond this number, data on information items is scarce and therefore expensive to produce. The 30-35 information items cover the following topics: 1) function; 2) job duties; 3) occupational specialties; 4) current employment; 5) employing industries; 6) environment; 7) work schedule; 8) organizations; 9) wages and supplements; 10) native qualitifications; 11) legal qualifications; 12) education, training and experience; 13) training sources; 14) hiring channels; 15) promotional ladder; 16) demand; 17) supply; and 18) supply/demand. Of course, all topics are not covered exhaustively but there is an average of nearly two information items per topic.

These information items also exhibit variation in their costs of production. For example, the information items can be separated into two groups. One group of information items exhibits little variation between geographic regions. As such, it is usually available and least costly to produce. These items are found within the following topics: 1) function; 2) job duties; 3) occupational specialties; 4) environment; 5) work schedule; 6) native qualifications; 7) education, training and experience; 8) employers; 9) promotional ladders. The other group of information items exhibit considerable potential for variation among geographic areas. This requires localizing the occupational information.

As such, the information is less often available and is more costly to produce. These items are found within the following topics: 1) legal qualifications; 2) training sources; 3) employee organizations; 4) hiring channels; 5) current employment; 6) personal characteristics; 7) wages and supplements; 8) demand; 9) supply; 10) demand/supply.

Beyond these information items, additional information is more costly to provide typically for the following reason: its utility is low unless it is localized, and yet, area specific information is even less likely to be available for these information items. Some of these items include information about specific aspects of wages and supplements, geographic location of jobs, detailed descriptions of training courses, and more detailed descriptions of occupational specialties. Much of this can be thought of as job search information.

Other factors such as accuracy and currency of information and level of localization are also basic cost determinants. The influences behind these cost determinats follow:

Accuracy of information. Accuracy of information is increased by comparing published information with other information sources. Attempts to increase the accuracy of information incurs rising costs beyond a point, because the number of sources is limited. Additional sources of information must then be developed or located after an exhaustive search, both of which are costly methods.

Currency of information. Currency of information is increased by shortening scheduled up-dating cycles. Attempts to increase the currency of information incur rising costs beyond a point, because information sources are updated only infrequently. Updating cycles are unproductive when new information is not available.

Localizing of information. Localization is increased by developing information for small geographic subdivisions or labor markets. Attempts to increase the localization of information incur rising costs between standard data gathering subdivisions and beyond the smallest data base, usually the city or county, because of the absence of data.

This economic analysis of occupational information suggests an optimum combination of factors. The costs associated with increasing the number of occupationas and information items, the level of accuracy, currency and localization suggest that none of these factors should be extended indefinitely. Instead, the interests of users and the costs of producing occupational information intersect at an earlier point. The characteristics of these factors have been considered carefully by CIS in bringing the information to its present state of development.

The level of development and future plans for each of these factors follows:

Number of occupations. Currently there are 224 occupational categories in the system. Eighteen new categories were added during the past year, three were deleted, and several were revised. With this level of detail, it has been possible to describe about 90 percent of the state's employment in occupational categories (e.g. welders, physicians, bookkeepers) that serve the occupational exploration purposes of most users quite satisfactorily. It is anticipated that there will be additions, deletions and revisions in the future. However, when additions are planned, first consideration will be given to developing information on a more limited number of topics, especially when the addition is clearly an occupational specialty. Occupational specialties, as implied by the title, are quite similar to a larger occupation in many respects. Because of this similarity, it is probably superfluous to develop information about fine shades of differences between occupations on these topics. Instead, it is more productive to concentrate on topics where information is more clearly distinct between occupations and occupational specialties.

Number of information items. Currently, there are approximately 30-35 items per occupation for which information may be developed. Information may not be developed for some topics when their significance does not seem to warrant the space required or when information is not available. Present plans do not call for development of additional information topics, in part, because this would increase costs and also move beyond career planning information into job search information. There are plans to determine which topics show significant variation between occupations and occupational specialties.

Accuracy of information. Accuracy of information is hard to measure but several attempts are being made to improve it. In most instances, and especially when information is highly variable and difficult to validate, more than one source is used to develop the information. Descriptions and Education files for each occupation are submitted to staff and review panels composed of five to seven persons for examination and validating. Descriptions and instructions are mailed to the review panels and a telephone follow-up for slow respondents is conducted one week later. The validation is considered to be reasonably thorough but not excessively exhaustive.

Currency of information. Information is continuously updated as new data becomes available in addition to the periodic reviews which are scheduled every six months. The result is that each occupation is examined systematically twice a year at the minimum. Of course,

every information item is not examined twice a year, but neither is new data available for every information item. Because of the irregularity of new data, future evaluation may indicate that systematic updating twice a year is unproductive. On the other hand, aside from real gains in productivity, frequent reviews increase the confidence of users who often seem convinced that the characteristics of occupations are in a constant state of flux.

Localization of information. Localization of information is accomplished through separation of information items into two groups: information that varies between geographic areas and that which doesn't. Only the information that varies between geographic areas is localized. The rest is delivered in all areas. Currently, localized information is available for the two largest labor markets in Oregon, the Portland and Eugene SMSA's. Under construction is localized information for Coos-Curry counties and the state as a whole (where such an approach is appropriate). Information for the state will be used in areas new to the System for which localized information is not yet available. All of the geographic areas for which information has been and will be developed follow county or governor's planning district boundaries which are common for data collection.

INFORMATION SOURCES

In developing data gathering methods, every organization faces a unique set of constraints determined by its resources, its structure and its connections with other organizations. The Career Information System has its own set of constraints and connections. The production of most occupational information has been undertaken by research sections in the Employment Service and the Bureau of Labor Statistics. By virtue of their organizational structure, these research organizations have been well connected to a number of important data sources regardless of the level of research funding. For example, personnel performing occupational research in the Employment Service have access to job orders with accompanying wage information, job applications and unemployment insurance claims, quarterly reports of employment, and the observations of counselors and placement specialists.

In the case of the Career Information System, because of its smaller size and more specialized function of facilitating the delivery of occupational information, it seemed unrealistic to rely on its own internal connections to develop data. It seemed that sufficient amounts of useful data were already being generated by many organizations. However, much of it was not reaching people engaged in career and program planning because a great deal of occupational information is published in technical formats that are neither appealing nor accessible to those

users. Furthermore, studies often go into more detail than the typical user wants. Instead CIS chose to depend largely on existing data and to increase access to this data through cooperative linkages with other organizations.

Specific Data Elements and Descriptive Information

Sources of data. In order to achieve its information development functions, CIS is constantly seeking out, identifying, acquiring, and updating information concerning the many characteristics of the labor market pertinent to the general functions of CIS. Although the geographic emphasis of concern is the Oregon labor market, for several reasons CIS seeks and acquires labor market data for non-Oregon areas as well. Because a large number of occupations, not well represented in Oregon industry, are of potential career interest to many Oregon students and because there are other significant gaps in strictly Oregon labor market data which may be fairly inferred from non-Oregon data, it is necessary to go beyond the state's boundaries for information. Furthermore, the Oregon labor market obviously does not operate in an economic vacuum; national and regional economic forces have major impacts upon Oregon's economic health. Thus, CIS obtains considerable information from non-Oregon sources to enable the CIS staff to better evaluate probable future manpower supply and demand relationships. Out-of-state information is often the only source of knowledge about changing job duties and clarification of worker trait requirements.

In an era of expanding formal training, raw figures on population growth or decline for an area, even when broken down by sex, age group, and employment status, are inadequate measures of current or future manpower supply. Therefore, it is essential that not only these data but also information relating to the capacity and rate of completions for training and educational programs be obtained. Because of their impact on training capacity, it is similarly necessary to acquire information about educational policies, whether in effect or proposed.

Table I below lists the key elements of information needed by CIS, and the major sources of the information. This table is intended to indicate the general types of sources used; as such it is illustrative rather than exhaustive, and emphasizes local rather than national sources.

Table II lists some of the sources that are used to develop information for career planning information files and the program planning reports. Sources are usually one of three broad types: (1) Standard Publications, (2) Unprocessed Data, and (3) Knowledgeable Persons.

Table I

MAJOR INFORMATION SOURCES

Data Element	Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
Nature of Job (incl. function, duties, & occupational specialties)	(1) Dictionary of Occupational Titles (D.O.T.)	Manpower Administration (MA) U.S. Dept. of Labor (D.O.L.)	National	Published (3rd Edition 1965)	Varies
	(2) Occupational Outlook Handbook (O.O.H.)	Bureau of Labor Statistics (BLS) D.O.L.	National	Published (1972-73 Edition)	Biennially
	(3) California Occupational Guides (Cal. Occ'al. Guides)	Cal. Dept. of Human Relations Development	California, but generally applicable to Far West	Published in looseleaf, inserted in binders	Varies
	(4) CIS Review Panels	Created by CIS Data Development Section	Oregon statewide	Committees (1 per occ.) contacted by mail or phone	Continuous
	(5) Brochures of professional, occupational, or industry	Various associations	Usually national	Published leaflets, booklets, or pamphlets	Varies
	(6) Position descriptions of large employers (e.g. state or county governments)	Oregon Personnel Division and personnel depts. of cities and counties, major industries	Varies with the employer	Usually printed for in-house use	Varies, but usually annually
	(7) Oregon's Current Occupational Employment Statistics Program With Projected Occupational Employment Statistics for Oregon...	Research and Statistics Section (R&S), Oregon Employment Division (O.E.D.)	Statewide and 6 state administrative districts	Published (but CIS has added D.O.T. codes)	1972, w/data updated semi-annually & pub. biennially
	(8) Employer Index	R&S and CIS	Portland SMSA	Computer printout	1971, no plans for updating
Working Conditions (incl. environment, work schedule, current levels of employment and earnings)	(2) O.O.H. (3) Cal. Occ'al. Guides (9) 1966 Supplement to the D.O.T. (4) CIS Review Panels	MA, DOL	National	Published	Varies

Data Element	Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data is Updated
Working Conditions (Cont.)	(7) See (7) above				
	(12) T.M.N.				
	(17) Oregon's Labor Force Trends	R&S, OED	Oregon statewide	Published tables and charts	Monthly
	(18) Labor Force: Employment; Unemployment; Hours and Earnings; Turnover--In The State of Oregon and Portland, Eugene, and Salem Metropolitan Areas	R&S, OED	Oregon statewide and the Portland, Eugene, and Salem SMSA's	Published in looseleaf	Annually
	(19) Pacific States Employment	BLS San Francisco Regional Office	8 western states	Published looseleaf leaflet	Monthly
	(20) Labor Force Trends (L.F.T.)	Local area manpower economists of OED	26 local areas & 14 Oregon administrative districts	Published commentary, tables & charts	Monthly
	(21) Labor Force in Oregon Counties	R&S, OED	Table for each county except SMSA's	Published looseleaf sheets placed in binder	Annually for each county + recomputations after benchmarking
	(22) Occupational Trends: Washington State, 1970-1975 Summary	Research & Statistics Branch, Washington Employment Security Dept.	State of Washington	Published report with commentary and tables	Oct. 1971, updating plans unknown
	(15) L.O.O.				
	(23) 1970 Census of Population	Bureau of the Census (B.O.C.) U.S. Dept. of Commerce as processed by Bur. of Gov't. Res. & Service, U of O	Oregon statewide, SMSA's, CCD's, ED's,	Published tables and magnetic tapes with computer printouts	August 1972, decennially
	(24) Job Bank Openings Summary (JBOS)	U.S.E.S. Manpower Administration, DOL	Varies--50 to 90 Reporting Job Banks across the nation	Microfiche	Monthly, series began with data for March 1972
	(46) Oregon Occupational Guides	OED	Oregon	Published in looseleaf	Varies

Data Element	Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data is Updated
Working Conditions (Cont.)	(25) County Area Skills Surveys also known as Manpower Resource of (county or area)	R&S, OED	Individual counties or small groups of counties, Portland area	Published	1962 to 1970, superseded by Industry-Occupational Matrix Estimates (1971-72) and by #7 above
	(4) CIS Review Panels				
	(26) Area Wage Surveys	BLS, DOL	Portland & Eugene SMSA's	Commentary with tables	Annually
	(27) State of Oregon Salary and Wage Survey Report	Personnel Division, Oregon Executive Dept.	Oregon statewide & comparisons with western states--public and private employers	Brief commentary, methodology, and tables with occupational definitions	March 1, 1972, annually
	(28) Compensation and Fringe Benefit Surveys (Local and State Governments)	By Lane County Dept. of General Administration	Several Oregon cities and counties, State of Oregon, & Clark County, Washington	Published commentary, position descriptions, wage and salary tables	Dec. 1972, probably annually
	(29) General Schedule (of salaries and wages for Federal employees)	U.S. Civil Service Commission	National	Published	As revised and published
	(2) O.O.H.				
	(30) Union contracts as reported by--	Bldg. Trades Council, and by BLS Regional Office	Eugene, Portland, Oregon & Pacific Coast states	Phone contacts & published BLS data	As needed (phone) and quarterly by BLS
	(31) Special Wage Surveys	Oregon E.D. manpower economists	Oregon administrative districts	Unpublished data obtained by phone	Intermittent
	(32) U.S. DOL News	BLS, DOL	National	Published	Occasional

Data Element	Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
Working Conditions (Cont.)	(33) Misc. Wage Surveys (e.g. Marple's Business Roundup, professional journals)	Various private organizations	National, statewide, and occasionally local	Various publications	Some monthly, others occasionally
Qualifications (incl. native qualifications; education, training & experience required)	(2) O.O.H.				
	(3) Cal. Occ'al. Guides				
	(4) CIS Review Panels				
	(10) Manpower Resource of the Portland SMSA	R&S, OED	Portland SMSA	Published	1968, no plans for updating
	(11) Occupational Manpower and Training Needs	BLS, DOL	National	Published as Bulletin 1701	1971, updating plans unknown
Institutional Setting (incl. types of employers, promotional ladder, legal qualifications, employee organizations, & hiring channels)	(2) O.O.H.				
	(3) Cal. Occ'al. Guides				
	(12) Tomorrow's Manpower Needs Vol. IV (T.M.N.)	BLS, DOL	National	Published Tables	1969,1971, updating plans unknown
	(13) Oregon Trade Associations	Various associations	Oregon statewide	Unpublished, data obtained by phone conversations with officials of assns.	Continuous
	(14) Directory of Oregon Manufacturers (D.O.M.)	Oregon Economic Development Division	Oregon statewide	Published index with cross indexes	1972, updating plans unknown
	(4) CIS Review Panels				
	(15) Licensed Occupations In Oregon (L.O.O.)	Occupational Analysis and Testing Section, O.E.D	Oregon statewide	Published	1970,1972, updating plans unknown
	(16) Lane County Hiring Channels Study	O.E.D.	Lane County, OR	Published tables	Not updated
Employment Prospects	(14) D.O.M.				
	(7) See (7) above				
	(34) Summary of "Help Wanted" Ads	CIS staff	Eugene & Portland areas		Weekly
	(12) T.M.N.				
	(20) L.F.T.				
	(35) Plants and Expansions	Oregon Economic Development Division	Oregon statewide	Unpublished in-house compilation	Irregularly

Data Element	Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
Employment Prospects (Cont.)	(24) JBOS				
	(2) O.O.H.				
	(3) Cal. Occ'al. Guides				
	(4) CIS Review Panels				
	(36) Newspaper articles	Eugene, Portland newspapers, and Wall Street Journal	Local, state-wide, and national	Newspaper articles	Daily or as available
	(37) News magazine articles	Time, Newsweek	National	Magazine	Weekly
	(38) Professional and semi-governmental journals, newsletters, and job listings (e.g. TAB, Job Finder)	Various professional societies (e.g. Amer. Soc. of Planning Officials), semi-gov'tal orgs. (e.g. WGRA), Western City	National, regional	Magazine	Varies, usually monthly but some are bi-weekly
Education and Training Sources; Rates of Supply	(39) Reports of graduates & other training course completions from Oregon post-secondary institutions by program & by year	Oregon Educational Coordinating Council	Oregon statewide	Published reports with tables and commentary	Annually
	(40) College Educated Workers, 1968-80	BLS, DOL	National	Published	Unknown
	(41) Apprenticeship and Training Summary	Oregon Bureau of Labor	Oregon statewide and by county	Published	Semi-annually
	(2) O.O.H.				
	(3) O.O.H.				
	(4) CIS Review Panels				
	(42) Various publications of Women's Bureau (e.g. Handbook on Women Workers)	Women's Bureau, D.O.L.	National	Published	Irregularly
	(43) The College Handbook and similar national publications	College Entrance Examining Board	National	Published books (2 vol.)	1972, updating plans unknown

Data Element	Data Sources	Author/Agency	Geographic Scope	Data Format	Frequency Data Is Updated
Education and Training (Cont.)	(44) Mapping Your Education	Abbott, Kerns & Bell Co.	Oregon and Washington	Published book	1972-73, annually
	(45) Steps Beyond High School (Educ. programs offered by public & private institutions in Oregon)	Oregon Board of Education	Oregon	Published looseleaf directory	June 1972, continuously updated by OBE

TABLE II

DATA SOURCES USED FOR UPDATING DESCRIPTIONS,
SAMPLE QUARTER, 1972

Information Items	Number of Occupations Updated	Sources: Knowledgeable Persons I	Sources of Unprocessed Data		Sources of Published Information			
			Job Bank Openings Summary II	Other III	Oregon Employment Division IV	Bureau of Labor Statistics V	Miscellaneous Wage Studies VI	Other VII
Employment Prospects	88	71	14	3	15	36	--	8
Wages	31	2	8	-	2	7	6	-
Current Employment	21	--	-	2	21	2	-	5
Training	13	9	-	-	--	-	-	4

The extent to which these sources are used is illustrated in Table II. The data on sources were compiled during a quarter when greatest attention was given to information items that vary between geographic areas. They illustrate the relative importance of various sources in updating occupational information topics. For example, development of employment prospects information required slightly greater consultation with knowledgeable persons and unprocessed sources than with standard published sources. This illustrates the point that the standard research output provides answers to many research questions, (Table II, Columns IV-VII), but some can only be satisfied by customized inquiries. Employment forecasts for many occupations are available, but the current outlook is known for only a few occupations. To determine the current outlook, it is often necessary to examine unprocessed data and tap informed opinions. Three principal sources of data have been used: 1) contacts with persons knowledgeable about the occupation; 2) newspaper "Help Wanted" columns; 3) data from the Job Bank Openings Summary.

On the other hand, the table reveals that reliance on knowledgeable persons and unprocessed data is less necessary with other information items such as current employment and wages. Two major data needs are worth discussing in detail. One concerns information on local and state current and projected employment by occupational specialty (6 digit D.O.T. code equivalent). Such data available for Lane County and the State of Oregon vary from one to five years old. The first results from the new Occupational Employment Statistics surveys giving current occupational employment in manufacturing industries will not be available until 1974, in non-manufacturing industries until 1975, and the first projections for occupational employment in manufacturing until 1976. All of these target dates assume no further staff cuts or major work load increases on personnel of the Research and Statistics Section, Oregon Employment Division, and a continuation of the present federally directed O.E.S. program. However, there are current rumors that the O.E.S. program is to be restructured with control to be given to the states together with supplementary funding. If this should be accomplished, the chief of the Oregon Research and Statistics Section believes that the timetable can be advanced.

The other data need concerns information on local and state current and projected supplies of trained manpower by occupation or occupational group. Some such data are becoming available for a number of occupational groups as a result of the efforts and publications of the Oregon Educational Coordinating Council. Nevertheless, substantial data gaps remain for many occupational groups as well as for specific occupations. A major data need for which there is small prospect for early improvement is in the current and projected numbers

of geographic migrants by occupation or occupational group into or out of the state or its local areas. The limited information available is obtained from the decennial federal censuses of population. The time spans between such censuses, however, are too great for the data to be of significant value to CIS.

In summary, standard published sources provide answers to a large number of research questions. Alternative sources of information such as knowledgeable persons and unprocessed data are used when the standard sources are inadequate. Most frequently this is the case when highly local information or information with a short useful life is needed. Currently, greatest needs are for data about occupational supply, wages, current and projected employment, hiring requirements and training sources.

Formats

Formats of standard published sources vary from highly technical reports to materials developed for career planning purposes. In part, the origin of CIS was based on the observation that a great deal of the best occupational information is published in technical formats that are often too detailed and neither appealing nor accessible to most users.

A different format problem encountered by CIS using some published information is the lack of technical notes accompanying the data. For example, the usefulness of some wage studies is limited by the lack of occupational definitions. The problem arises because a great deal of data useful in occupational information is generated without this purpose in mind. To increase the value of this information, CIS has developed forms for common data sources which pose pertinent questions. Several of these forms are described later in this chapter and exhibited as Appendix H.

Information categorized as unprocessed refers to data sources that are not completely processed, some of which are totally unprocessed and others incompletely processed. Representative formats of totally unprocessed data are help wanted ads in newspapers. Currently CIS processes the major Sunday newspaper in the two largest labor markets in Oregon. This is done by coding the advertisements by the occupational classification system, summarizing the ads at the level of the occupational cluster, and computing 4-week moving averages. The data has two uses: 1) it serves as a time series for analyzing occupational demand and 2) it provides names of "knowledgeable persons" for a variety of occupations.

More thoroughly processsed is the Job Bank Openings Summary. Additional processing is done to develop time series for occupations for which job orders historically have been greatest. Some care and supervision must be exercised in using this JBOS data in order to avoid misinterpretation and place it in its proper labor market perspective. Other data comes in tabular form ready for use by a researcher familiar with the source but obscure to most others.

In summary, useful data comes in a variety of formats. With the exception of information developed expressly for occupational information purposes, most requires some additional processing.

Frequency of Information

Information is developed by organizations and individuals at both regular and irregular intervals. Organizations such as BLS, whose primary objective is to publish information, adhere to the most regular schedules. Other organizations such as the Employment Service, whose information development responsibility is one of many, publishes some of its information, like labor market letters, at regular intervals and other information, like occupational information at less regular intervals. Shifting priorities and budget allocations seem to be responsible.

Data generated by a large number of the organizations without an explicit information development responsibility is much less regular unless the information is produced for another specific purpose such as personnel classification or wage determination. However, through systematic arrangements and searching procedures, impressive amounts of information are almost always available.

Another aspect of information frequency is the timeliness of data. Sometimes information is too old to be of much value by the time it is published and released. This is most often the case when the information is highly perishable such as wages, and when it is published in formats that require lengthy preparations.

Geographic Scope of Data

Some information items vary between geographic areas while others do not. For information items that fall into the latter category, data developed at the national level is used and preferred for reasons of efficiency. There is usually an adequate amount of data to meet these information needs. Information in the former category requires data

developed at the local level. Rarely, however, is this data completely available, especially when the local area is smaller than the state as a whole. An example is wage information. It is sometimes possible to use and customize national and state data in these instances. Sometimes, national data is compared with local data from the JBOS to verify its proximity to local conditions. At other times, national data is used in the information files and exposed to review panels for validation before it is published.

In summary, while methods are available for customizing national data to local areas, the need continues to exist for information produced at the local level.

Data Storage

This information pertaining to the labor market and to education acquired by CIS is stored in a library-depository consisting of materials on shelves and in vertical files. All of the materials are classified, in accordance with a classification system developed by CIS (see Appendix F), by subject with cross classification by title and author/agency in alphabetic order. Because of the highly specialized nature and subject relationships of library materials, regular library classification systems such as the Dewey Decimal and Library of Congress methodologies did not readily lend themselves to our needs.

All materials arriving at CIS are separated from correspondence and miscellaneous financial and personal mail and then placed into packets by the secretary. The contents are then classified and marked according to the CIS library classification system. The packet of materials is then routed to all other CIS professional staff members. When a staff member wishes to use an item for more than a short time, he attaches a note to the item requesting its return to him. By this method all staff members are apprised of the arrival of all new informational items in a brief period. After the packet of materials has completed the round of the staff, those items requested by particular staff members are returned to them and the remaining items are shelved or filed.

Information received by telephone is noted on forms, classified, and then filed. Similarly, in the case of newspaper articles or other relatively small items in publications the bulk of which is extraneous to our needs, the article or item is either cut out or xeroxed, classified, and then filed.

The process of retrieval of labor market information from the

shelves and vertical files of the CIS library is standardized, regardless of the purposes of retrieval. Although staff members tend to become familiar with the library's contents through frequent use and as a result of having seen new materials cross their desks, a reliance upon one's memory is inadequate and often imperfect. The library catalog file not only has a main entry card for each item in the library with the item title filed alphabetically but also a subject classification card file. In the case of the former, a user knowing the name of a source finds it in alphabetical order and on the main entry card notes the subject code classification, e.g. III-A-16 which includes occupational information about bookkeeping occupations. When the title is unknown, however, but the user has a subject in mind, he refers to the library classification system (Appendix F), finds the subject code, then checks the second file, i.e. the subject classification card file, and there finds cards for all of the materials in that category. (It might be added that the subject codes III-A-11 through III-A-98 correspond to the first two digits of the user information files stored in the CIS computer).

CAREER PLANNING INFORMATION FILE MAINTENANCE

This section describes the files in which information is stored for use by students and counseling clients, together with the procedures used to maintain those files.

System Components and Sources

Occupational description file. Since the heart of the information system is the description file, much of the preceding section concerning information sources applies to the descriptions. As mentioned in the earlier section on the "Economics of Information Development," the occupational descriptions consist of up to 30-35 specific information items that provide the reader with a brief but complete picture of the occupation. They can be separated into two groups, area specific information items that vary between geographic areas and common information items that do not. This separation is useful because it lends itself to a division of labor with some people responsible for common information and others for area specific information items. It also avoids inefficient duplications of common information development when information files are established for several areas.

Of course, needed information is rarely available for all 30-35 information items. When it is not, several alternatives are available. The information item may be judged unimportant and deliberately left out of the description. Or if judged important, national or local

data may be customized depending upon the information item.

Descriptions of the information items and analysis and writing instructions are provided in the paper "Format and Instructions for Writing Occupational Descriptions." (See Appendix H.)

Of course, other System components are also dependent upon information sources. The following discussion will describe these System components, some of the problems, and the recent work done with them to illustrate the importance of information sources.

Education file. This is designed as a file which describes hiring requirements for the occupations and lists institutions where schooling can be obtained. Three key problems have been classification systems, quality of training programs, and information sources.

Classification systems are a common source of trouble when working with occupational information. In developing this file, problems have occurred because most educational programs are identified only by title, not OE codes, and the relation to occupations is sometimes difficult to infer.

Secondly, the quality of the various schools we are listing and perhaps implicitly recommending is also a problem. Information on program evaluation is inadequate.

Finally, information sources is a problem by itself which contains the seeds of solution for the above problems. Truly adequate sources would help with the problem of classifying educational and training programs with occupations, evaluating educational programs, and locating the names of all public and private training institutions. Equally serious is the need for information about hiring requirements.

Thus far, rather than collecting and reading 200 catalogues, we tried to locate a reliable secondary source. Though there are numerous publications in this field, most are not accurate or timely. Steps Beyond High School, an Oregon Board of Education publication, has served this purpose best. For further clarification of programs, program review and consultation with knowledgeable individuals are being used.

In developing statements on hiring requirements, we have relied on several sources. Most important have been: Manpower Resource of the Portland Metropolitan Area; Occupational Outlook Handbook; Occupational Manpower and Training Needs; Lane County Labor Skill Survey; Licensed Occupations in Oregon; Dictionary of Occupational

Titles; and telephone contact with knowledgeable individuals.

Attribute file. This file contains the attribute codes developed for the occupations which are used to process the QUEST questionnaire. With nearly 225 occupations coded several times for each of 25 questions, the file contains over 15,000 entries.

Several factors require the file be given attention: 1) When new occupations are added to the System, a set of attribute codes must be developed. 2) Although the attributes for most of the questions are fairly stable, four of the questions are sensitive to labor market changes and the occupations must be monitored for these changes. 3) A file containing over 15,000 codes is vulnerable to clerical errors and must be examined periodically to detect these.

During the last quarter, a thorough review of the file was completed. This was done for several reasons. A card-sort system was developed, and it was felt that the attributes should be examined before the cards were punched. Three questions were re-specified requiring code changes for some of the occupations. And a new area, Coos County, was added to the system which required another set of attribute codes added to the file for the location question. The review resulted in a total of 1,015 changes and additions. The most important information source for the non-labor market questions in QUEST was the Job Bank Profile, Master File Listing (March 15, 1972). Sources used in the examination of the question which pertains to educational and training requirements were the Occupational Outlook Handbook, The Manpower Resource of the Portland Metropolitan Area (April 1978), and the Oregon Apprenticeship Manual and expert observers in various fields, employers and manpower economists of the Oregon State Employment Division; sources used to determine "location" were the Occupational Outlook Handbook (1972-73 edition), the Oregon 1970 Census of Population, the Oregon Industry-Occupational Matrix Estimates, manpower economists of the Oregon State Employment Division, and the career education coordinator for a new area to the system; personal job characteristics' sources used were the Occupational Outlook Handbook (1972-73 edition), the Manpower Resource of the Portland Metropolitan Area (April 1968), and the Oregon 1970 Census; sources used with entry-level wages were expert observers in various fields, employers, newspaper "Help Wanted" ads, manpower economists of the Oregon State Employment Division, the Job Bank Openings Summary, the Occupational Outlook Handbook (1972-73 edition), the Manpower Resource of the Portland Metropolitan Area (April 1968), Oregon 1970 Census, and various wage studies.

Visit file. This file includes the names of people in the Eugene area available to discuss their respective occupations with interested individuals. This file is currently available in Lane County.

The file includes the names of nearly 270 persons in over 180 different occupations. This large collection of names was compiled in cooperation with the Rotary Clubs with members of the Rotary Club contacting workers in the occupations and confirming agreements. The Lane Intermediate Education District provided the liaison between the Rotary Club and CIS. CIS provides ongoing file maintenance.

Cassette interviews. This system component provides taped interviews with people in various occupations which give a "feel" for what the work is like.

Necessary sources are persons available for interviews and information about the occupation for the interviewer to study. Basically, information sources are the same as those used in the descriptions.

Sections from the unpublished handbook entitled "Handbook for Developing Taped Occupations Interviews" describe some of the needs for information and suggest some sources. (See Appendix G.)

Currently, there are nearly 25 taped interviews that have been produced by CIS. It is clear that there are too few of these tapes to develop an adequate test of this component. Future plans are for more development, experimentation and testing of this component on a pilot test basis.

Bibliography and books. This component refers users to the most pertinent general and specific publications about particular occupations.

Identification of such sources is a natural byproduct of the development of the CIS library. It is also contributed to by such sources as the bibliographies appearing in the Occupational Outlook Quarterly and recommendations by manpower economists with the Oregon Employment Division and the Career Information System.

Career Planning Information Updating Procedures

The career planning information program of CIS has the more systematic updating requirements; consequently this section will emphasize that activity. Program planning information development procedures are described in Chapter V, Services to Users.

The career information maintenance program has two elements, one designed to respond quickly to new information, the other to facilitate systematic improvements. The first element of the career planning information maintenance program is continuous updating of all information files to reflect new information as it flows to CIS from sources such as those described above. For instance, when new wage or employment outlook information becomes available, all pertinent computer files are promptly updated.

The volume of continuous updating depends largely upon the flow of information to CIS. Without a strong flow of information, most updating is done during the periodic review. During this process, considerable time is spent locating information materials. As the flow increases, more opportunity arises for continuous updating of information items and less reliance is placed on the periodic review.

The second thrust of the processing method adopted for career planning information is the periodic review of system components and information content. At the rate of approximately one occupational cluster per week, every occupation is examined over a period of time just under six months. The reviews are not open-ended attempts to examine all system aspects. Instead, specific objectives are developed for each round. For example, a fairly typical set of objectives for a review might be: 1) Develop area specific (localized) information for all areas new to the CIS; 2) Update and restate employment prospects sections of all occupations descriptions; 3) Add and update wage information for all occupations.

In addition to processing and developing new information, the periodic review is designed to validate the content of the information system. The primary vehicle for accomplishing this is a review panel established for each occupation. The review panels are typically composed of six individuals: a worker in the occupation; an employer of workers in the occupation; an Employment Service placement specialist in the occupation; a manpower economist; a representative of a training institution preparing people for the occupation; and an "expert observer" or someone with special expertise about the occupation. So far, review panels have been established for over half of the occupations involving over 200 different individuals representing several areas of the state.

Each member of the panel has a slightly different relationship to the occupation (i.e. worker, employer, placement specialist, training representative, expert observer) and is asked questions that correspond to that expertise. Since the descriptions are the heart of the System

and can be most easily exchanged through the mail, this is the component which the review panel is most often asked to examine. The comments of the review panel are in turn used to update other System components.

Certain instruments have been developed to assist the process of information maintenance. A short description and evaluation of each of the instruments is provided here; copies of the instruments appear in Appendix H .

"Format and Instructions for Writing Occupational Descriptions." Description: This outline sets forth instructions and sources for writing descriptions according to the CIS format. Review draft was developed for manpower economists and others assisting in information development.

Evaluation: Instrument has been very useful with new employees in acquainting them with methods and sources. Value with manpower economists has been limited by lack of cooperative agreement.

"Demand-Supply Worksheet for Specific Occupations." Description: This sets forth definitions, instructions and sources as well as worksheet which could be used for developing estimate of current employment outlook.

Evaluation: Worksheet cannot be used explicitly because of lack of readily available supply data. Nevertheless, the definitions are very useful in thinking through estimates of employment outlook without data. Useful in training new employees.

"Occupational Specialties Worksheet". Description: Used to summarize worker traits, attributes and some labor market aspects of occupational specialties that comprise an occupation in the Career Information System. Developed for the purpose of reviewing attribute file for an occupation and breaking out new occupations. Uses worker trait and labor market data for highly detailed occupational specalties.

Evaluation: Instrument proven useful during a review of all non-labor market questions. Provides a record on which to question validity of attribute codes. Also useful in analyzing similarity of occupational specialties grouped together.

"Occupational Description Source Record." Description: Instrument is used to record the sources on which information in the description is based.

Evaluation: Instrument has proved to be increasingly useful for answering questions about data sources as well as providing continuity and sources for subsequent updating.

"Source Notes." Description: Instruments are used to record pertinent details about raw data gathered from professional associations, licensing boards, etc. Developed because these details rarely accompany such materials but are necessary for interpretation of such data in labor market terms.

Evaluation: Proved useful when gathering a larger number of materials for use by the manpower economists. Since that time, resources have not permitted such extensive materials gathering.

"Information Item." Description: Instrument was designed to provide a cross reference to data sources not stored in the occupational files.

Evaluation: Instrument has proved useful in identifying data sources such as articles in Employment Service News, Rural Manpower Services Reports shelves in the library. In part created to involve other staff in data gathering, but not an effective device for that purpose.

From the experiences acquired in reviewing the health services and timber products occupations and submitting the descriptions to the review panels, certain observations came through clearly. The review is an efficient method for examining all System components for these occupations simultaneously. For example, wage information was examined and updated simultaneously in the description and attribute files, insuring consistency.

In distributing the descriptions to the review panels, it became clear that a procedure for monitoring and following up on slow responses was needed. In the case of both clusters, half of the respondents replied promptly, while the others were slower to respond. Generally, the manpower economists and placement specialists with the Employment Service returned their comments within the shortest space of time. When the manpower economist and placement specialist were located within the same local office, they frequently discussed the information contained in the description, a fortunate side effect of the procedure.

Computer Loading

For career planning information updating, CIS has developed a standard procedure for updating the files stored in the computer.

Depending upon the objectives, a research design is developed to answer efficiently the questions at a satisfactory level of confidence. For example, the sources listed in Table I suggest places to find information for the various topics. After conducting the research, new or updated information is developed and recorded on a form that indicates explicity choice of language and location of new information within the various files. The clerical teletype operator then types the information into the computer in accordance with the instructions and data appearing on the form. This form is used to guarantee that the prepared copy will fit into the computer storage files which have relatively fixed capacity.

The creation of new System components and the need to prepare particular information components for use in new areas has necessitated a much more in-depth effort with some System components than the periodic review permitted. For example, the EDUCATION file has been recently developed. Major modifications were made to both the description file and attribute file prior to placement in Coos County. In the description file, information items were sorted out to conform to the common and area specific information formats and transferred to another computer. In the attribute file, changes were made to conform to a change in the lifting question, to a more careful specification of several of the labor market questions and to a general clerical review.

It is well to point out that the pressure to meet the needs of several new areas of service has postponed some of the testing of the information development system. The presence of clients in need of information is an enviable problem and the future costs of serving new areas will not be as great nor arrangements as disruptive now that the groundwork has been laid. Nonetheless, the pressure to produce quickly has interfered with the orderly implementation of the updating procedures outlined above.

While these deadlines have precluded extensive experimentation with the periodic review, this situation has served to re-emphasize the advantages of such a systematic approach. The experience of the last year strongly suggests that the periodic review results in greater integration and consistency of System components. The description file, attribute file, and cassette tape interview for an occupation can be examined together to check for consistency. Further-more, the periodic review incorporates the advantages of planning while remaining flexible enough to permit some adjustments in objectives as it becomes necessary.

The Career Information System has developed procedures for information development that have proven effective and efficient. At the same time, these procedures require well-trained labor market analysts. It would be erroneous to believe that these procedures could be implemented by staff members without backgrounds in labor market analysis. CIS's reliance on information developed by other agencies and individuals requires a high degree of expertise so as to perceive the limitations of existing data and the pertinent questions to ask. In effect, the procedures make it possible for competent analysts to develop more information at a higher level of quality than would otherwise be possible. CIS or another organization intent upon developing occupational information will have to bear in mind this manpower requirement when planning future system developments.

DATA FLOW CHART

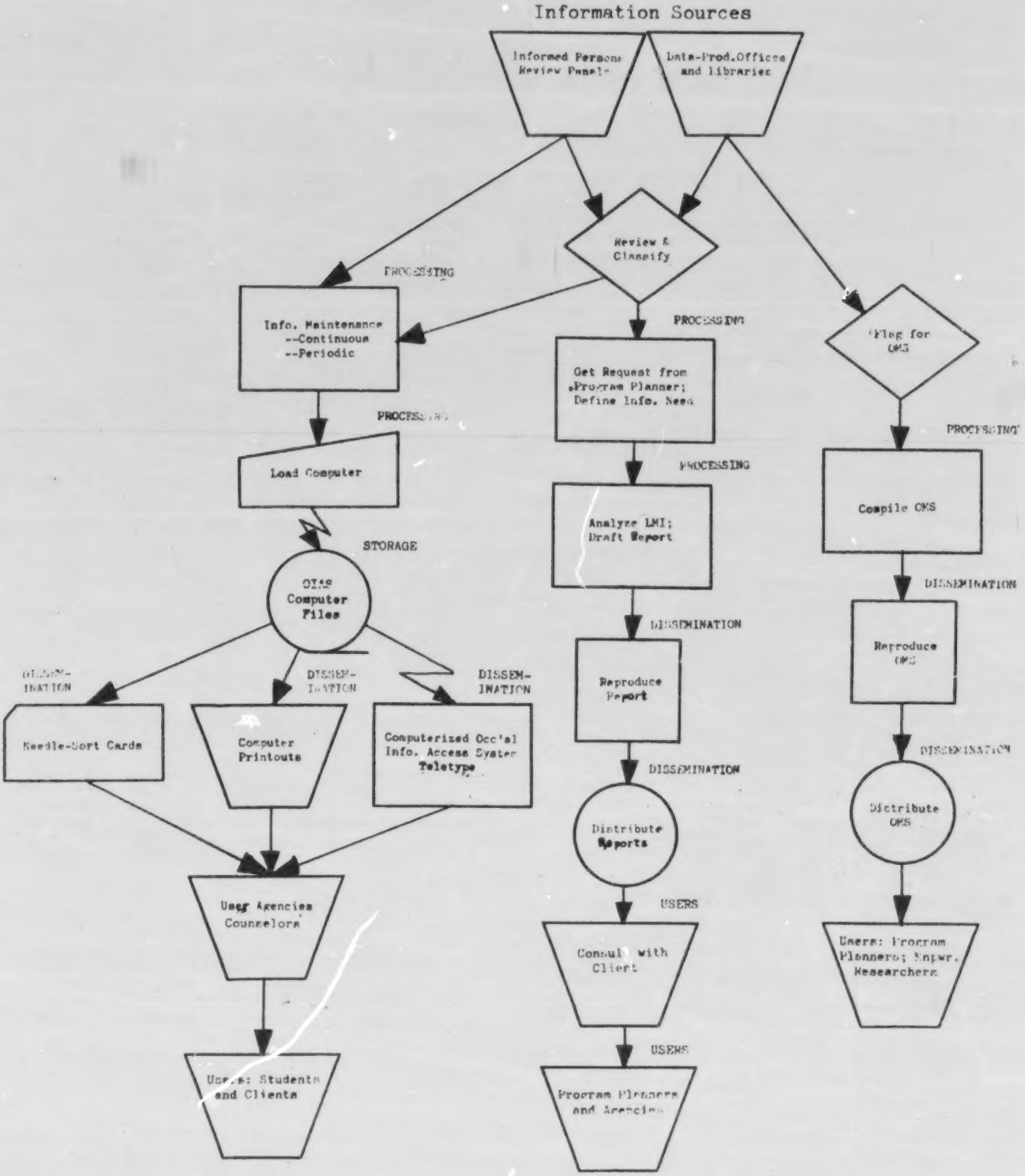
The chart below illustrates how labor market information flows from data sources through CIS to the ultimate users. Broadly, the data sources at the top of the diagram are placed in two categories: a variety of local, state, regional, and national labor market information-producing agencies and organizations and libraries, including educational agencies, which provide educational and training statistics and data concerning educational programs; and the CIS review panels plus various informed persons having specialized or professional knowledge about specific occupations, occupational groups, or general economic factors affecting the labor market. All data from the first category funnel through the CIS library where it is reviewed for utility and appropriateness and the retained materials are classified in accord with the library classification system (Appendix F). Information originating in the second category of data sources is normally obtained on request of a CIS staff member and the response goes directly to him. Records from these sources are sometimes made and filed with other information about the topic at hand.

The functions and procedures for development of the career information were described earlier in this chapter and are graphically portrayed on the left side of the chart. The symbol labeled "Information Maintenance" represents the intensive processing stage at which the data in the computer storage files is reviewed, revised, and updated on the basis of the latest information stored in the library and information received from the review panels, etc. From that point the processed data is delivered via electronic/mechanical means to user agencies, their students and clients.

Career Information System

INFORMATION FLOW CHART

Showing the processing of labor market information through CIS to produce Career (left) and Program (center) Planning Information and Oregon Manpower Studies (right)



The series of steps whereby program planning information is developed and delivered and Oregon Manpower Studies is compiled and published are described in some detail in Chapter IV. The flow chart illustrates the process involved in responding to a major data request from an educational program planner as well as those entailed in the production of Oregon Manpower Studies. The handling of the simpler data requests of course frequently eliminates some of the steps shown on the chart.

In all three sections of the chart, attempt is made to indicate in summary form usual storage, processing, and dissemination steps of the Career Information System.

EVALUATION OF INFORMATION CONTENT AND TIMELINESS

There are several methods for evaluating the content of the Career Information System. One method is to gather and analyze the comments of users. Another method is to compare the content of the information system with a model information system. Both of these approaches will be utilized.

User Satisfaction

Evaluation and pilot testing of the occupational information delivery system during Phases I and II have closely examined user satisfaction with the information contained in the System. It is important to note that user satisfaction with the information is really a judgment about System process as well as information content and format. The timeliness and pertinence of the information for a particular user partially depends upon the attractiveness of the process for obtaining the information.

When students at Churchill High School were asked to assess the CIS occupational descriptions, 95 percent rated them as "accurate and up-to-date," 81 percent reported that they "related the job to my own interests, values, and abilities," 67 percent rated them "complete (covered all important topics)," and 95 percent rated the descriptions "easy to understand." "The feeling that the descriptions are 'easy to understand,' expressed by 95 percent of the high school students who used the System, is striking because the material is not easy to understand by conventional readability formula standards."[2]

[2] Bruce McKinlay and Daniel Adams, Evaluation of the Occupational Information Access System as Used at Churchill High School, Bureau of Governmental Research and Service, University of Oregon, Eugene, Oregon, 1971, pp. 12-13

Responding to the question, "How satisfied were you with the information you received?", 84 percent of Churchill students who used the System indicated they were satisfied with the information presented. Eighty-seven percent indicated they were able to find the information they were looking for.[3]

Similar results were reported with Lane Community College students. When asked how satisfied they were with the information they received, 84 percent of the students were either satisfied or very satisfied with the information delivered by the System.[4]

The vast majority of counselors who have worked with the System have commented positively on the System overall as well as on the accessibility, quality, and quantity of the occupational information contained in it. However, the evaluation in the three State Employment offices in Portland was designed to obtain highly specific comments from participating counselors about the content and format of the information especially the occupational descriptions. The following excerpts from the Portland evaluation summarize the counselors' assessment of the occupational descriptions.

> Counselors' opinions of the descriptions were unanimously positive and only a few noted minor deficiencies of content. The three counselors who indicated deficiencies commented that some of the descriptions were not of sufficient depth, that they should be related more to the local labor market, and that the amount of information on schooling included in the descriptions was limited. One counselor thought that some of the descriptions were a little too long, but all others considered the length satisfactory or very good. No counselor had any suggestions for improving style and format of the descriptions or on the procedure for getting them.
>
> All but one counselor considered the information in the descriptions definitely satisfactory. The one counselor who rated the information fairly poor emphasized the geographic factor, saying it was not local enough and not sufficiently current for local needs. This counselor remarked about the almost weekly change of local demands

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[3]Churchill, pp. 20-21.

[4]Larry Lynn Ross, The Effectiveness of Two Systems for Delivering Occupational Information: A Comparative Analysis, Master's Thesis, University of Oregon, Eugene, Oregon, 1971, pp. 66-67.

for specific occupations and referred to the sudden but temporary effects of labor disputes on local demand in specific occupations. It is apparent that this particular counselor was giving heavy emphasis to immediate employment opportunity rather than longer range occupational decision making.

Table III reveals that the vast majority of counselors found the content and topical coverage of the job descriptions satisfactory. While they were asked to rate length, they in fact were rating the adequacy of information content for each topic on the list. None indicated that any topics included were superfluous or unduly emphasized.

While the majority of counselors rated content of the job descriptions satisfactory on all counts, a portion indicated their desire to have more information on several topics. With the exception of wages and fringe benefits, counselors were almost unanimously satisfied with coverage of all topics concerned with the nature of the job and working conditions. Like everyone else, counselors commented that they would like to have more localized and more detailed wage rate information.

Qualifications for employment was the area where counselors most frequently and consistently indicated a desire for more information. Qualifications, together with wages and demand provide the information which is not only informative for exploratory purposes, but useful in determining the appropriateness of an occupational choice. (Since completion of the Portland test, additional information on training sources has been developed and included.)

Counselors' ratings and comments on job descriptions pose something of a dilemma. While asking for more information on some topics, counselors expressed almost unanimous satisfaction with the overall length of the descriptions. Only one counselor felt they were a little too long. Above a third of the counselors asked for additional information on a number of items, without compensating reductions in other items. The fact that a large majority of counselors found the topical coverage, as well as the overall length satisfactory, cautions against wholesale alteration of the descriptions. In drawing conclusions from this test, it is important to remember that

TABLE III

COUNSELORS' RATINGS OF TOPICS OF INFORMATION CONTAINED IN OCCUPATIONAL DESCRIPTIONS

Topic	Percent of Counselors Suggesting: More	Same	Less	Drop
Nature of Job				
Function	-	100%	-	-
Job Duties	-	100	-	-
Occupational Specialties	-	100	-	-
Working Conditions				
Current Employment	8%	92	-	-
Employers	-	100	-	-
Work Environment	8	92	-	-
Work Schedules	-	100	-	-
Organizations	-	100	-	-
Wages and Fringe Benefits	23	77	-	-
Qualifications				
Native Qualifications	31	69	-	-
Legal Qualifications	23	77	-	-
Education, Training, Experience	38	62	-	-
Training Sources	31	69	-	-
Hiring Channels	31	69	-	-
Promotional Ladder	31	69	-	-
Employment Prospects				
Demand	31	69	-	-
Supply	15	85	-	-
Supply/Demand	15	85	-	-

the project resources went primarily to delivery system development, not to information development. It is actually quite encouraging that counselors and clients were as satisfied as they were with the information content of the information files during the test. The quality of the information content can be expected to rise when the system is implemented permanently

and information is maintained over a longer time period by means of a more consistent and sophisticated information development program. Improvements in information on a number of topics have already been made and included.[5]

The detailed comments of counselors on the job descriptions point at the fact that information content and format are highly satisfactory in their present form. Information now available in the education file, a component originally proposed and only recently developed, was a frequent request of users. Development of an information component which would relate high school and college courses to careers or occupational clusters has been suggested and studied. Development of such a file has been initiated, but is still in the design stage at this point in time.

Evaluation by School Staff

Another opportunity for gathering evaluative comments occurred during May and June 1972 when the Lane Intermediate Education District and the Career Information System called a meeting of all school coordinators on which they were asked to record their reactions to the System.

In addition, questionnaires were sent to coordinators in the schools who did not attend the meeting. In all, the System was used by about 7,000 students in these schools during the 1971-72 school year.

Respondents by no means limited their comments to the informational content of the System. Rather, they looked at the information system as an operating program. Thus, their comments cover a wide range of topics, from log-in procedures to terminal location to time allotments. Some of the comments pertain to information content at various levels of sophistication.

Comments of this kind can be very useful. In as much as the coordinators report accurately user reactions to the System, these comments provide a record of how people who are actually using the System see it in terms of its strengths and shortcomings. Of course, comments of this kind are likely to include comments on topics about which the respondent is not well qualified to speak. For example, user reactions are not the best measure of accuracy of information. Nevertheless, it is extremely useful to know if users are generally confident, ambivalent or distrustful about the content of the information system.

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[5] Portland, pp. 26-30.

A summary of all the comments and suggestions made by coordinators as well as actual comments which pertain to the content of the information system are listed below under the appropriate question.

What changes in the OIAS need to be made before it can be effective?

Too much down time has been discouraging to students.

Response time has sometimes been slow. Way to speed up input would help more students to use the system.

Some schools are unable to use terminal as much as they would like for OIAS, due to conflicts of time with problem solving and records use, difficult access to terminal (too far away from classroom, etc.), or problems with secretaries who do not want students using "their" terminal.

Some of the directions for terminal use are wrong. (questionnaire says to use "d" control key, when it should be "s.")

Some parts of the printout are confusing to students (i.e., statement of number of jobs remaining after a question. student does not know how to proceed with the questionnaire.)

Only three of the 18 questionnaires made comments pertinent to information development. This comment was returned by a junior high school coordinator.

...The vocabulary is somewhat difficult for Jr. High students. Teachers need to be aware so they can fill in the gaps. (I had a whole class of 8th and 9th graders that didn't know what a BS degree was. The best answer they would come up with is that you go through college as a bachelor.)

This comment was returned by the coordinator in a senior high school.

...Expand System (Education file, Jr. High bit)
...Military File (Another facet of career decision-making)

This comment was returned by the coordinator in a senior high school.

...More audio (or visual) accompanying materials. (Tapes, etc.)

What things should be considered before implementing the OIAS? What decisions should be made before implementing the OIAS?

Students should receive counseling to understand the questionnaire and what the system can do before using OIAS.

Junior high students need close supervision during use.

Students should be taught the mechanics of using the terminal; must have access to clear printed instructions for use of the system; and need to understand various approaches to use of OIAS -- know how to ask for a particular description, visit, etc., in addition to going through entire questionnaire.

There is a need for a definite schedule of time available for OIAS terminal use.

Terminal should be located where it can be supervised and yet where noise will not interfere with other office routine. It would be ideal if it could be located near the SUTOE or career counseling area.

Students need to know where to locate hand-outs describing use of machine (special messages and keys). (Should be posted near the terminal).

Some thought that descriptions of jobs should be available as printed materials, so students could refer to them again without using the terminal.

Secretaries need to understand what the OIAS does and be able to help students, since many times they are the only ones around when the student is using the system.

OIAS coordinators and secretaries should know where to report problems and that suggestions, comments, etc., are welcome by CIS and Career Ed.

There were really no comments directly pertinent to information development that accompanied this question. However, one coordinator from a senior high school made the general suggestion

...Perhaps we should ask the students who have used it for in-put to these questions.

What positive things about the OIAS have you experienced? What's good about the OIAS?

Students like using the terminal. Use of terminal is a strong motivational tool.

Students like having the printout. They take it home and discuss results with their parents. Parents are interested in the system.

Increases student interest and awareness in available careers.

General public (parents, curriculum committees, visit file people, PTA, etc.) is interested in OIAS. Many would like to try the system themselves.

Information received is current and valid.

The largest number of comments pertinent to information development accompanied this question. Nine questionnaires contained these comments. One was returned by a junior high school coordinator.

...The OIAS seems to keep up to date. It tells you where to go for more information.

Another comment came from a senior high school coordinator.

An increase of interest in the students in jobs and the world of work. A great variety of students came in all the way from college bound (professional) to the ones having difficulty getting through high school. ...It seem (sic) to give concise information that was understanding (sic) to all of the students.

This comment came from a senior high school coordinator.

Some students have talked with people "in the field" as recommended by OIAS and have reporte d success. Even when the list was not what a student thought he wanted, it encouraged him to analyze his responses. (Salary, education, etc.) I like it. Students begin thinking about careers. They become aware of a number of different career possibilities. The information given pertinent to the local area: A more realistic approach for the students.

The other comments came from coordinators who did not identify their grade level.

> Kids are motivated easily to use it and often take the results home to discuss with parents.
>
> Students like to use the terminal and feel the information is personal and important to them. They come back to reuse the terminal to get additional information not received on the first usage.
>
> Students end up with a more realistic view as to what particular jobs are like and how many job types are available in our own area.
>
> (I) feel print out is essential. Many students take print out and for first time they will discuss possible plans for their future.
>
> Increased use of occupational files. Increased awareness of jobs that are available (increase personal horizons). ...Curriculum committee was impressed with the OIAS.
>
> High interest by students in both using the terminal and information received. Parent interest results... Current information.[6]

Since these evaluations, CIS has tried to respond to the criticisms and suggestions while preserving the attractive aspects of the system. For example, as mentioned in the section on delivery systems, CIS is now converting to the Hewlett-Packard computer where down time is less frequent. Furthermore, new computer programs and more explicit instructions to users through in-service training and user handbooks have improved the speed and efficiency of questionnaire processing and communications. More attention has been given to the location, operation, and availability of the computer terminal.

With respect to the information in files, CIS has developed the education file. CIS continues to update its information files continuously. It has added occupations to the System which increase the occupational coverage of the System. During the current review, employment prospects and wage information is receiving attention.

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[6]Bill Manley, Summary of Comments and Suggestions Regarding OIAS. Lane Intermediate Education District, May 31, 1972, p. 1-2.

At the same time, CIS respected the need for concise information and is avoiding the lengthening of occupational descriptions.

Comparison with Model Labor Market Information Data Needs

As previously stated, another method of evaluating a system of labor market information is through comparison with a model information system. This approach has been undertaken using a model information system developed from the Report on Job Search Information, Job Market Information, and Manpower Data in the California Department of Human Resources Development, May, 1972. It is a useful approach in that it uses expressions of need from one of the principal institutions using career information--The Employment Service.

The California report resulted from a task force established to examine the needs for and preparation of labor market information within the California Department of Human Resources Development. In preparing the list of information needs, the Task Force set aside the budget constraint. A close examination of the list of needs also suggests they ignored conceptual and methodological constraints. Consequently, not all of the list of 39 information items are feasible with present research concepts and methods aside from their financial feasibility.

Nonetheless, the list provides a useful basis against which to measure the content of the Career Information System. The information items are classified by the Task Force as to their importance--from "essential" to "not important." The following table summarizes a more detailed comparison of CIS services with the California enumeration.

On the basis of this comparison, it is possible to draw some conclusions. CIS is presently delivering information on most of the items found useful by the California Study, though usually in less detail. Where CIS is not delivering the information or is delivering only part of it, it is usually for lack of data or because the information seems to be of more use in job search than in career planning, which is the current focus of CIS counseling-related information delivery efforts.

Table IV

Information Items and Summary of CIS Delivery Capability

Ranking of Information Items in California Report	CIS Delivery		
	Full or Summary (1)	Partial (2)	Not Delivered (3)
1. "Essential"	6	5	2
2. "Major Improvements"	1	6	2
3. "Minor Improvements"	1		1
4. "Not Useful"	4		11

SUMMARY

This chapter on information development has dealt with the topics of economics of information, information sources, data storage, career planning information file maintenance, manpower requirements, and evaluation of career planning information content and timeliness. As is apparent from the title, some subsections deal exclusively with career planning information. Others such as information sources and data storage have a more general orientation to all of CIS information development including program planning. Since program planning uses this data and information system it may seem logical to describe and analyze program planning services in the rest of the chapter.

However, because consultation with clients is such a central part of program planning, this topic is taken up in Chapter 5 on "Service to Users."

The chapter documents that CIS has established systematic procedures for processing and utilizing occupational information. Evaluations of the career planning information components indicate that procedures are workable and the output well received, but many refinements and much work remain to be done. The centrality of information development to CIS cannot be emphasized too strongly, and the progress it has achieved suggests that this link in the information flow may prove functional.

Chapter IV

CAREER INFORMATION DELIVERY SYSTEM

There are many weak points in the delivery of occupational labor market information to individuals planning their careers, but perhaps the most severe weakness is the almost total lack of efficient, functional, attractive systems by which these unsophisticated users can access comprehensible information in forms, places, and times that are appropriate for them. It is an often neglected fact that information is of no effect unless it reaches decision makers, yet an individual currently has limited options for obtaining occupational information. He can try to see a counselor, if he is fortunate enough to have such services available to him at all; he can write away to a professional or trade association for promotional literature; he can try to choose a current and factual source in an ill-stocked library; or he can forget the whole information gathering exercise as more trouble than it is worth and simply "ask around." The latter option may in fact be the rational choice; in any case it is the predominant pattern, as many studies testify. In attempting to systematize the delivery of information, CIS has given explicit attention to both the information itself and the vehicles by which it is delivered. The subject of this chapter is the delivery system used to provide individual career planners with access to the information.

NECESSARY FEATURES OF AN INFORMATION DELIVERY SYSTEM FOR CAREER PLANNING

To be an effective aid for individual vocational planning, a career information delivery system should possess some fairly well-defined capabilities. A careful review of the literature reveals the following characteristics of an ideal occupational information delivery system:

1) Make information accessible to persons of varying ability and experience.

2) Provide a means for integrating occupational information with clients' interests, values, aptitudes, and abilities.

3) Deliver information in the various media that are most appropriate for delivering various kinds of information.

4) Display and/or deliver information in an attractive manner.

5) Provide accurate and current information, including capacity for updating.

6) Supply local as well as national data.

7) Provide information concerning a wide variety of occupational groups.

8) Include such specific information as: (a) job duties, (b) work environments, (c) hiring and training requirements, (d) terms of employment, (e) hours, (f) current labor market situation, and (g) long-range outlook.[1]

9) Function efficiently.

It is apparent from this list of specifications that an adequate information delivery system requires certain standards for information content, e.g., timeliness, localization, comprehensiveness, as well as certain standards for the delivery mechanisms, e.g., accessibility, multi-media, attractiveness, efficiency. With the importance of delivery mechanisms in mind, CIS has continued efforts to build and manage an efficient and effective system for delivering occupational information to persons making career decisions. CIS has relied heavily, though not exclusively, on some of the delivery system components from the Occupational Information Access System. Extensive pilot testing in a variety of settings has resulted in continuing refinements and modifications to those components and an accumulating body of evidence establishing this system as an attractive, effective, and efficient means of delivering occupational information to a diverse range of clients.

The prime goal of CIS delivery system management is facilitating access to occupational information for career choice. To meet this goal, four objectives were established: (1) to emphasize the labor market information content of the System; (2) to make a variety of information system components available to persons of varying needs and abilities; (3) to adapt the System to the programs and resources of schools and agencies; and (4) to work toward systems that are usable independently or as a part of the counseling or instructional process.

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[1] Bruce McKinlay and Daniel Adams, Evaluation of the Occupational Information Access System as Used at Churchill High School, Bureau of Governmental Research and Service, University of Oregon, Eugene, Oregon, 1971, p. 11.

CIS currently manages essentially two versions of the delivery system, (though many variations of each are possible). One version, the computerized system, utilizes a teletype terminal as the primary medium; the other version, the occupational needle-sort, substitutes a needle-sort card deck and computer printouts for the terminal. While both versions use the QUEST questionnaire, their difference lies in the procedures for obtaining the list of occupations and the occupational descriptions. With the computerized version the user types in the code word, "DESC," and the occupational code number. The computer in turn prints out the requested occupational description. With the needle-sort system the user turns to a bound book of occupational descriptions which are arranged in numerical sequence. The occupational descriptions in the computer version can be easily updated; whereas, the currency of the descriptions in the needle-sort system is dependent upon the frequency of producing new books of descriptions. The delivery system components used by a particular institution are determined in consultation with the institution's staff and in consideration of client needs and institutional resources.

The purpose of this section of the evaluation report is to recapitulate the available information about the delivery system components' effectiveness.

THE QUEST QUESTIONNAIRE AND LIST

The QUEST questionnaire and list process is the means used by most people to access the occupational information produced by CIS. The introductory portion of the QUEST questionnaire contains the instructions necessary for a person to complete the questionnaire, and enter his or her responses via a teletype terminal or manually sort a deck of cards. The mechanics of the QUEST component's operation are such that clients can operate it without outside instruction or assistance, freeing counseling time for interpretation and planning.

Completion of terminal usage or card sorting results in a list of occupational titles which serve as a point of departure for further occupational exploration. The QUEST list, whether printed by teletype or appearing on a stack of occupational cards, provides an exploratory base from which the user can directly obtain pertinent information from the various information components of the delivery system. While clients and students can operate the System without assistance, it is compatible with counseling and is used by counselors to enhance the counseling process.

Rationale and Processing of QUEST Questions

The QUEST list of occupational titles is the product of the individual user's configuration of responses to the 25 QUEST questions which include the factors of physical limitations, regional location and city size preferences, amount of educational preparation attainable, working conditions, aptitudes, interests, and minimum acceptable salary. Questions pertaining to physical limitations, working conditions and aptitudes are based directly on the classification and relationships between worker trait factors and occupations contained in the Dictionary of Occupational Titles. The rationale of the interest questions is based on the relationships between data-people-things and specific occupations as expressed in the D.O.T. occupational classification system. Standard labor market data sources are used for the factors of regional location, city size, amount of education, and salary.

Processing logic retains the universe of occupations contained in the System except when a user records a response that is demonstrably inconsistent with a factor critical to a particular occupation. If a person gives a consistent response, the occupation is retained. The user can respond to any question with "no preference" or "I don't know," thus effectively bypassing the question and eliminating no occupations. Thus, occupations are eliminated from a person's list of occupational titles only when the user has responded to a question with a definitely inconsistent response, and then only when that factor is critical to an occupation, as determined from D.O.T. worker trait and data-people-things relationships and standard labor market sources.

Validity of QUEST Questionnaire

The validity of the questionnaire is a function of its readability and the ability of the user to self report. QUEST is not a test "but an instrument for recording information which is presumed to be known to the individual. Its validity, therefore, depends upon its readability, upon the user's ability and willingness to answer the questions, and upon the validity of the labor market and worker trait factors on which the individual questions are based."[2] The real criterion for evaluating QUEST is not whether it predicts or measures, only whether it identifies some new pertinent occupations.[3]

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[2]Bruce McKinlay, Validity and Readability of the Occupational Information "QUEST" Questionnaire, University of Oregon, Eugene, Oregon, 1971, pp. 27-28.

[3]Validity and Readability, p. 34.

Extensive field testing in schools and social agencies has established the readability of the questionnaire for both disadvantaged and non-disadvantaged clients. "Over 90% of the counselors and clients in various schools and social agencies who tested the System rated it easy or very easy to use."[4] In a major test of OIAS in three State Employment offices in Portland involving 267 clients, 94% of disadvantaged and 96% of non-disadvantaged clients rated the questionnaire easy to read.[5]

"The real test of the questionnaire" is "whether it accurately reflects the client as he sees himself. Counselors who have used the questionnaire say it does,..."[6] In testing the ability and willingness of the user to self report, there was 80% concurrence between E.S. client responses and counselor or GATB assessment of him.[7]

From field tests it is clear that QUEST does identify new, pertinent occupations. Those who used the System increased their range of pertinent occupational alternatives significantly. In the Churchill High School study, 70% of the students who used OIAS reported that the list of occupational titles gave them some new occupations that they would seriously consider for future work. Certainty of students' career plans also increased after using the System.[8] In the Portland evaluation 86% of disadvantaged and 90% of non-disadvantaged clients indicated that QUEST related jobs to their own likes and dislikes, values and skills.[9] "The vast majority of both non-disadvantaged and disadvantaged clients indicated they received new alternatives and possible new directions through use of QUEST."[10]

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[4]Validity and Readability, pp. 1-2.

[5]Jerry Weick, Occupational Information for Employment Service Counseling: An Evaluation of Occupational Information Access System Pilot Use in Three Portland Employment Division Offices, University of Oregon, Eugene, Oregon, 1972, p. 16.

[6]Validity and Readability, p. 31.

[7]Validity and Readability, p. 34.

[8]Churchill, p. 3.

[9]Portland, p. 16.

[10]Portland, p. 19.

A study in one junior high school, where students in a vocational exploration class using OIAS were compared to a matched group of students who received no vocational instruction, showed a statistically significant increase in the number of occupations students in the experimental group were able to list. Students in the class using the System were able to list 34 occupations, on the average, while students not in the class were able to list only a mean of 21 occupations. There was a striking parallel between occupations listed by students who used OIAS and the occupations contained in the System. Thus, it is clear that OIAS, at least when used in conjunction with a vocational exploration class, expands the number of occupational alternatives for consideration.[11]

Client satisfaction with the occupational list, in terms of the clients' own judgments about themselves, supports the logic of the QUEST questions and their processing; evaluation and field testing provide further substantiation of the rationale for the questions individually and QUEST as a whole. Item-by-item analysis of QUEST questions was a part of the test in ES offices in Portland.

"Counselors were generally satisfied with both content and wording of QUEST questions. A large majority usually favored keeping the questions as worded. None of the questions was found to be grossly ambiguous, misleading, or irrelevant, though some posed more problems than others. No counselor indicated that the number of questions was too large, while six counselors suggested that more questions should be added, either to include or expand upon such factors as interests, temperaments and personality characteristics."[12]

In an earlier test of OIAS in six pilot agencies it was concluded that "the QUEST (questionnaire-list) process for suggesting occupations to consider proved to be effective. Counselors saw the questionnaire as good in itself by clearly stating 'variables' in addition to interests."[13]

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[11] Leonard D. Adams and Lawrence K. Fowler, Vocational Counseling at the Junior High School Level, A Case Study at Shasta Junior High School, Eugene, University of Oregon, Eugene, Oregon, 1971, pp. 3-6.

[12] Portland, p. 19

[13] Bruce McKinlay and Larry L. Ross, Evaluation of Occupational Information Access System Use in Six Pilot Agencies, University of Oregon, Eugene, Oregon, 1970, p. 6.

Quest List

The relevance of the occupations on the QUEST list and the length of the lists has been evaluated specifically in tests in schools and social agencies. Most lists were of useful length so that, by and large, length was not a problem. The number of occupations remaining on lists averages approximately 30. About two-thirds of user lists range between 5 and 40 occupations. Evaluation indicated that when a person's list was substantially shorter or longer, it often stimulated the user to re-evaluate his responses to the questionnaire and to answer less restrictively or with more precision. Two features of the System are definite aids in this process. The computer program encourages the user to ask "why not" for a given occupation which was not on his list, and a second feature allows the user to change his or her response to previous questions. The first results in listing the clients response which eliminates a specific occupation, and the second allows a changed response to a prior question.

This tendency of users to re-evaluate their preferences points to a very important conclusion of the Portland study; namely, that "QUEST was creatively manipulated as a tool by the client rather than used in a rigidly mechanical fashion." There was also evidence that clients generally understood QUEST in the content of the occupational decision-making process.[14] "There was no evidence in the responses of clients to indicate that the list was restrictive or taken too seriously."[15] Evaluation thus indicates that usage of the questionnaire and list have an educative function which increased user awareness of the occupational decision-making process, apart from the occupational information it provides. The user becomes aware of how his responses to questions affect the range of occupations appearing on his list for exploration and consideration.

Attractiveness

QUEST is a highly attractive way of initiating occupational exploration. Attractiveness of the questionnaire was specifically evaluated in a number of System tests. Ninety percent of non-disadvantaged and 86 percent of disadvantaged clients in Portland Employment Service offices indicated that it was fun to use.[16] In

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[14] Portland, p. 17

[15] Portland, p. 18

[16] Portland, p. 16

a test of OIAS at Churchill High School 92 percent of the students who used it rated the questionnaire fun to use.[17] These ratings are consistent for all field tests. The QUEST process is effective in producing a list of personally relevant occupational titles to explore, and this feature quite obviously contributes heavily to its attractiveness to the user.

There are differences in attractiveness between the computer version and the needle-sort version of OIAS. The needle-sort has no feature matching the attractiveness of the teletype terminal in the computer version. In the Portland test disadvantaged users found the System less attractive than the non-disadvantaged user, but the vast majority of disadvantaged users found the terminal attractive. While the card-sort was reported as less attractive than the terminal version, both were considered effective.

A problem with the original version of the manual version was that the user is given more information than he wants. (In that version a job description was printed on each card.) This format resulted in some users giving the descriptions only a cursory review, or not reading the descriptions at all. As noted below, that feature has now been changed.

The card-sort does have several features that are attractive from an operational point of view. It is mobile--it can be used at the counselor's desk or wherever convenient. Problems associated with terminal usage are eliminated; that is, there is no terminal noise; terminal down time and expense of terminal rental and computer time are eliminated. The manual system allows the user to see in detail the results of his decisions. For example, if a user states he does not plan to complete high school, he will see the occupations that fall out because of his decisions. This was the main advantage cited by counselors from the Portland Employment Division offices.

The current version of the needle-sort system was developed during the Fall of 1972 and is now being pilot tested at eleven schools in Coos County, Oregon. This version, as with the earlier version, utilizes a card deck with one card for each occupation. Unlike the earlier version, a description is not included on the individual cards. Instead, the descriptions are periodically printed out from the computer and bound into a booklet. It is hoped that this will assist the user in reading the descriptions. Here, he will see only the descriptions that interest him.

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[17] Churchill, p. 15

Although CIS has not yet made a formal evaluation of the modified needle-sort system, an informal poll of the counselors at each site in Coos County showed that it was already being used extensively. All stated that it is a good counseling tool.

Efficiency

Effectiveness of the questionnaire and list has a direct bearing on efficiency. Evaluation indicates that savings in counselor time are relatively small when QUEST use is completely monitored by a counselor in the counseling process. However, since it has been shown that System usage expands and enhances the occupational exploratory and decision-making processes, there are quality increases as well as time savings. Counselors tended to take advantage of the increased amount of information available through the System which they would otherwise have foregone or obtained only by spending more time in information collection than they ordinarily spend.[18] In a study comparing OIAS and the conventional, verbal delivery of information in the Lane Community College Counseling Center, results indicated OIAS was at least as effective and definitely more efficient as an information delivery system. Additionally, OIAS was a much less expensive way to obtain and deliver comparable information.[19] "OIAS delivers occupational information of at least equal quality to the Counseling Center in approximately one-half the time per user, at a cost one-tenth or less that of the Counseling Center."[20]

Range of Effectiveness

In the various tests of the System the QUEST questionnaire and list have been used both independently and in conjunction with a counselor as part of the counseling process. It has been demonstrated to be effective under both conditions, and with widely varying types of clients--youth and adults, disadvantaged and non-disadvantaged, the unmotivated and the highly motivated, bright and articulate college students and slow high school students, as well as people with some idea of their goals and those with no idea what they want to do.[21] In the Portland test, counselors

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[18] Portland, p. 6

[19] Larry Lynn Ross, The Effectiveness of Two Systems for Delivering Occupational Information: A Comparative Analysis, Master's Thesis, University of Oregon, Eugene, Oregon, 1971, pp. 83-84.

[20] LCC, p. 80

[21] Six Agencies, p. 4

reported that it was not effective with severely disadvantaged clients with little or no reading skills and with clients who were not interested in making an occupational choice. It also appears that persons with very low abilities tend to become discouraged, and probably need extra counseling to make a sound and satisfactory choice. These limitations help delineate the areas of this component's effectiveness and provide guidelines as to which clients should use the System.[22]

Modifications and Further Development

As a result of extensive field testing and evaluation, numerous modifications of the QUEST questionnaire have been made and the development of some revised questions is underway. Because the System is still new, continued research and development is necessary even though implementation is proceeding. Some of the possibilities for refinement have resulted in additional funds being made available by the U.S. Employment Service for development of additional selection criteria and operational formats. These test alternatives incorporate the worker trait factors of interests and temperaments as possible substitutes for the data-people-things questions of the present questionnaire. Aptitude and physical demand factors are being expanded to include all those of the D.O.T. Lastly, certain items are specifically designated as strategy questions. Such questions are designed to make explicit the high degree of choice on such factors as location, salary and amount of education a person is willing to obtain, since, in an actual job choice situation, most people are willing to make trade-offs between such factors.

INFORMATION COMPONENTS

There are five information components contained in the System: occupational descriptions, selected bibliography and books, visits, occupational interview cassette tapes, and the education and training opportunities file. While the job descriptions have proved to be the most popular and valuable information component for most users, the other components have been considered most helpful by a small but significant portion of users.

Table V indicates the relative use of the questionnaire and the information components by Employment Service Clients in Portland. The other evaluations have shown similar results. (The education and training opportunities components was developed subsequent to the

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[22] Portland, p. 11

evaluation of the System in Portland Employment Division offices, so it is not ranked in this list.)

TABLE V

FREQUENCY OF CLIENT USE OF SPECIFIC INFORMATION COMPONENTS OF OIAS[23]

Component	Frequency of Use	
	Non-Disadvantaged Clients	Disadvantaged Clients
QUEST	100%	100%
Job Description	95	88
Bibliography and Books	29	11
Employer Index*	11	9
Cassette Tapes	6	7

*The Employer Index was developed and implemented only for Portland.

In the remainder of this section each component will be described and evaluated for attractiveness and effectiveness in delivering information.

Occupational Descriptions

Function: To provide a brief statement of essential information about an occupation in easily and readily accessible form.

Form: These concise 300-word descriptions are available in the form of computer printouts for each of the occupations in the System. They describe the function of the occupation, occupational specialties, related occupations, types of employing establishments, working conditions, hiring requirements, licensing requirements, training opportunities, pay, and employment outlook. (See Sample on page 81.)

[23] Portland, p. 25

SAMPLE OCCUPATIONAL DESCRIPTION

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10 FOR I=1 TO 3
20 PRINT "KEYPUNCH OPERATORS USE ALPHABETIC AND NUMERIC"
30 PRINT "KEYPUNCH MACHINES, SIMILAR TO TYPEWRITERS, TO"
40 PRINT "TRANSCRIBE DATA FROM SOURCE MATERIAL ONTO"
50 PRINT "PUNCH CARDS. SINCE THE MACHINE FEEDS, POSI-"
60 PRINT "TIONS, AND EJECTS CARDS AUTOMATICALLY, THE"
70 PRINT "OPERATOR'S MAIN FUNCTION IS TO DEPRESS THE"
80 PRINT "PROPER KEYS IN THE CORRECT ORDER. KEYPUNCH"
90 PRINT "OPERATORS OCCASIONALLY USE OTHER DATA-PRO-"
100 PRINT "CESSING EQUIPMENT, SUCH AS CARD SORTERS AND"
110 PRINT "ACCOUNTING MACHINES."
120 PRINT "CURRENT LOCAL EMPLOYMENT: 1725, NEARLY ALL"
130 PRINT "FEMALES. EMPLOYERS: WORK IN LARGE SIZE FIRMS"
140 PRINT "POSSESSING MODERN DATA PROCESSING EQUIPMENT"
150 PRINT "IN VIRTUALLY ALL INDUSTRIES. ENVIRONMENT:"
160 PRINT "NOISY AND SOMETIMES CLUTTERED ATMOSPHERE,"
170 PRINT "PERFORMING ROUTINE, REPETITIOUS WORK; LITTLE"
180 PRINT "INDEPENDENT JUDGMENT REQUIRED. WORK WEEK:"
190 PRINT "MAY INCLUDE EVENING AND NIGHT WORK. SALARY:"
200 PRINT "AVERAGE WEEKLY INCOME FOR KEYPUNCH OPERATORS"
210 PRINT "IS JUST OVER $100."
220 PRINT "APTITUDES, ATTITUDES: WILLINGNESS TO PERFORM"
230 PRINT "ROUTINE WORK ACCORDING TO SPECIFIED PROCE-"
240 PRINT "DURES; GOOD COORDINATION OF EYE-HAND MOVE-"
250 PRINT "MENTS, FINGER DEXTERITY AND VISION. HIRING"
260 PRINT "REQUIREMENTS: GRADUATION FROM HIGH SCHOOL OR"
270 PRINT "BUSINESS SCHOOL. TRAINING: AVAILABLE AT HIGH"
280 PRINT "SCHOOLS, PRIVATE BUSINESS SCHOOLS, P.C.C. AND"
290 PRINT "CLARK COLLEGE."
300 PRINT "EMPLOYMENT PROSPECTS: BALANCE. THE OUTLOOK"
310 PRINT "DEPENDS UPON THE CONTINUATION OF KEYPUNCH AS"
320 PRINT "A METHOD OF DATA ENTRY FOR COMPUTER SYSTEMS &"
330 PRINT "TURNOVER OF THE CURRENTLY EMPLOYED. PRESENTLY"
340 PRINT "PROSPECTS ARE GOOD BECAUSE OF HIGH TURNOVER &"
350 PRINT "THE FAILURE OF AUTOMATED SYSTEMS TO ELIMINATE"
360 PRINT "KEYPUNCH. THE LIMITED EARNING POTENTIAL IS A"
370 PRINT "FACTOR UNDERLYING THE HIGH TURNOVER. SINCE"
380 PRINT "EMPLOYERS PREFER OPERATORS WITH EXPERIENCE,"
390 PRINT "RECENT TRAINEES MAY HAVE DIFFICULTY LOCATING"
400 PRINT "JOBS & SHOULD EXPECT TO WORK IRREGULAR HOURS."
410 NEXT I
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Performance Criteria: (1) Contain localized information, as well as state and national information; (2) continuously updated; (3) concise (300-word maximum); (4) a description for each occupation in the System; (5) cover a variety of common and area specific information. Common topics include: nature of the job, working conditions, qualifications, and institutional setting. Area specific topics include: local training opportunities, local factors affecting working conditions, ie. unions, etc., normal hiring channels, employment and earnings, and employment prospects.

User-System Interface: First the user determines the occupational title and its numerical code. The user can get the title and code number from his QUEST list or from the alphabetical listing of occupations contained in his user handbook.

When using the teletype terminal, the user enters "DESC" followed by the occupational code number; the terminal responds by printing out the description.

For the manual system, the user locates the descriptions he wants by their code numbers in a bound copy of descriptions. Periodically, CIS has the DESC file for each occupation printed out from the computer; these descriptions are then reproduced and bound in numerical order by occupational code number.

Attractiveness: In a detailed study of the computer version at Churchill High School, "virtually all users said the descriptions were fun to use, easy to understand, accurate and up-to-date. Substantial majorities also said they related jobs to their personal interests, values, and abilities, and were complete."[24] The descriptions were found in all the evaluations to be the most frequently and most widely used information component. The Portland study found that 95 percent of the non-disadvantaged, and 88 percent of the disadvantaged, clients who used OIAS utilized this component of the System. "When clients were asked to rate which component of the System, including the questionnaire, was most helpful, 60 percent of the non-disadvantaged clients and 52 percent of the disadvantaged rated the job descriptions as most helpful."[25] The great attractiveness of the System "seems to be a reflection of the computer terminal's attractiveness as an information display device that presents only the information requested

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[24] Churchill, p. 12

[25] Portland, p. 25

and provides a copy for the user to take with him. The amount of time required for a description to print out (about three minutes) has been criticized by some computer personnel and vocational educators as boring. Students do not agree."[26] Thus both high school students and a range of agency clients, both disadvantaged and non-disadvantaged, are widely satisfied with the content and format of the occupational descriptions.

Effectiveness: As with attractiveness, effectiveness of the occupational descriptions is a function of system process and informational content. A substantial majority of users reported that the descriptions related jobs to personal interests, values, and abilities, and were complete.

"The feeling that the OIAS descriptions are 'easy to understand,' expressed by 95 percent of the high school students who used the System, is striking because the material is not easy to understand by conventional readability formula standards. Research in the readability of OIAS descriptions indicates that the style is probably no easier to read than other standard occupational information such as the Occupational Outlook Handbook...."

"User motivation, the limited length of the material to be read (250 words), and the 'liveliness' imparted to the script by the operating teletype seem to compensate for material which is fairly technical in nature and whose style is fairly typical of occupational information."[27]

Counselors, too, were satisfied with the overall length of the descriptions and the topical coverage of the descriptions. In a detailed review of the descriptions, they asked for more information on some topics, notably hiring requirements, but showed overall satisfaction. This appraisal points up the acute need for information, but cautions against any wholesale alterations of descriptions.[28]

Selected Bibliography and Books

Function: Refers the user to important published sources of labor market information.

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[26] Churchill, p. 13

[27] Churchill, pp. 13-14

[28] Portland, pp. 29-30

Form: A selected bibliography page for each occupation in the System. The bibliography page lists books which have information concerning the occupation and the page or pages within the book where the information can be found.

The set of books contains general sources, i.e. the standard occupational publications, and special sources, i.e. specific publications about training programs, licensing requirements, etc.

The Bibliography and Books are placed together near the other components of the System.

Performance Criteria: One bibliography page for each occupation in the System (See following example). Includes only the most important sources. Includes specific, detailed sources as well as general sources.

User-System Interface: The user locates the bibliography page for a specific occupation in the Bibliography Notebook, finds an appropriate reference, and turns to the page in the reference source as listed in the Bibliography.

Attractiveness: For most users the Bibliography and Books offer little attraction. "Most clients were satisfied with using the questionnaire, obtaining a list of occupational titles, and getting a few printouts of job descriptions." The Bibliography and Books required looking up references, a step which many clients were not interested in doing. However, while only 16 percent of the clients in the Portland study used the Bibliography and Books, the vast majority of those who did rated it "fun to use" and personally relevant.[29]

Effectiveness: The Bibliography and Books are a case where effectiveness is not directly tied to attractiveness. Seventeen percent of clients using it rated this component as the most helpful part of the System in the Portland test. In the test at Churchill High School 6 percent of System users rated the Bibliography and Books as the most valuable information component.[30] The vast majority of clients who used this component found it helpful. Although only a small proportion of clients used this information component, client ratings and counselor comments indicate that it is a worthwhile component, and

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[29] Portland, pp. 31-32

[30] Churchill, p. 18

SAMPLE BIBLIOGRAPHY AND BOOKS PAGE

Career Information System

ARCHITECTS (2316)

GENERAL SOURCES

Occupational Outlook Handbook (1972-73 Edition)	pp. 237-239
Vocational Literature Files (if available)	

SPECIAL SOURCES

Education and Training Opportunities	
Careers	p. 23
Hiring and Licensing Requirements	
Licensed Occupations in Oregon	pp. 3,38,19
Occupational Manpower and Training Needs	pp. 36,37
Employment Outlook	
Manpower Resources of the State of Oregon and Its Metropolitan Areas	pp. 34,66
College Educated Workers (not available in Junior High Schools)	pp. 16,17
Worker Traits	
Dictionary of Occupational Titles (Vol. II)	p. 371

should remain available to that select portion of clients who find it helpful and are able to use it."[31]

Visits

Function: To provide personal contact between the System user and a person who is working in a particular occupation, thus giving the user the opportunity for personal discussion with someone in an occupation and observation of a work site. (See sample on next page.)

Form: The VISIT file provides referral information via the teletype terminal to an individual person working in a specific occupation who has previously agreed to discuss his or her occupation with interested individuals. There often is more than one name per occupation, giving the user some variety of location, firm, and occupational specialty.

Performance Criteria: (1) Report name, title, telephone number, firm name, address, city, and contact instruction for each referral. (2) Identify one or more interviewees in 182 occupations.

User-System Interface: First, the user determines the occupational title and its numerical code number. The user can get the title and code number from his QUEST list or the alphabetical listing of occupations. By entering INFO and the occupational code number, the terminal will inform him if a VISIT in that occupation is available. The user can enter VISIT and the code number; if a visit is available, the name and pertinent information of the person to visit will be printed out. If a visit is not available, the terminal will so inform the user.

Users working with the occupational needle-sort find the name and pertinent information of persons to visit entered on the card referring to the particular occupation.

Attractiveness: The VISITS are not as attractive to users as many of the other components; only 12 percent of the users in the Churchill evaluation made use of them. However, one third of students who used the VISIT file rated it the most valuable information component.[32] Terminal records and observations indicate that users access the information in this file far more often than they actually go out on a VISIT. It appears that it takes counselor or teacher

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[31] Portland, p. 31

[32] Churchill, p. 18

VISIT 4124
PERSON TO CONTACT:
PROCTOR T. MATEER
FORESTER-TIMBER MGMT
PHONE: 896-3614
NAME OF FIRM:
WILLAMETTE NATIONAL FOREST
BLUE RIVER RANGER STATION
BLUE RIVER
SPECIAL INSTRUCTIONS:
PLEASE MAKE APPOINTMENT IN ADVANCE

THIS PERSON HAS VOLUNTEERED TO DISCUSS HIS OCCUPATION WITH YOU. (THIS IS NOT A REFERRAL TO A JOB INTERVIEW). PLEASE KEEP YOUR APPOINTMENT.

OIAS/LANE/02-08-73

SAMPLE VISIT PAGE

encouragement to motivate students and clients to utlize this resource.

There is little difficulty in finding people to accept visits from users. The Eugene area Rotary Clubs undertook, as a club-wide project, the expansion and maintenance of names for users to visit in the Eugene metropolitan area. The Eugene file currently contains names of 267 individuals representing 182 of the 224 occupations in the System.

Occupational Interview Cassette Tapes

Function: (1) To help the user understand the affective nature of the occupation from the perspective of someone working in that occupation. (2) To provide a brief introduction to the function, work setting, and major job duties of specific occupations or occupational clusters. (3) To provide information for a person unfamiliar with the occupation or not equiped to handle more abstract information (written descriptions, data, etc.) (4) Useful in presenting occupational information to a group.

Form: Recordings of interviews with persons employed in, or knowledgeable about, an occupation. Postscripts are added to give further labor market information and/or to correct for information bias by the interviewer and to relate the interview to the local area. Postscripts can be deleted and added to meet an area's needs.

Performance Criteria: (1) User operable, with minimal staff control of materials. (2) Average length: 12 minutes.

User-System Interface: The user can see from the listing of available information whether an interview tape is available. If it is, he simply obtains the appropriate cassette from the file and listens to it on available tape players.

Attractiveness/Effectiveness: Testing of this information component has been somewhat limited and results mixed. Initially a significant number of commercially produced occupational cassettes were used, but they proved distinctly inferior and lacked the credability of those developed by project staff. The limited number of occupations presented by a taped interview has been another source of user dissatisfaction. In early testing only 17 different interview tapes were available, there are still only 24.

"Some additional evaluation of the interview cassettes was gained when a set was sent to the Tacoma Ghetto Job Information Project. The interview cassettes were reviewed by the Employment Service counseling and job placement staff as well as being tested in some

high schools. Employment Security staff felt the tapes would not be helpful with job ready clients, but they did feel that they would be helpful to young entry workers being referred to trainee positions and clients in general during vocational exploration or orientation prior to career counseling.

When the tapes were used in several live demonstrations before high school audiences, students were 'attentive and enthusiastic.' The Tacoma Ghetto Job Information staff said students found them very interesting and helpful and were particularly interested in the economic information provided. This additional test of the interview cassettes confirms the broad appeal of the cassettes in school or other group settings. However, their value in individual counseling seems limited to certain kinds of clients at specific points in the vocational exploration process."[33]

Education File

Function: To inform the individual where he can receive training to prepare him for placement in a particular occupational area.

Form: The file includes an initial statement on the relative importance of formal education, apprenticeship training, and on-the-job training as a hiring requirement for the occupation. That statement is followed by a list of training institutions, addresses and phone numbers. This file is stored in a computer. (See sample.)

Performance Criteria: (1) User operable. (2) Covering all public and private four-year schools, community colleges, private vocational schools, and apprenticeship programs which have occupational preparation as an objective. Listings include all programs in the state, except that others are listed when no programs exist instate. (3) An education file for each occupation in the System.

User-System Interface: First, the user selects the occupational title about which he wants education and training information. The occupational title and code number can be taken from either the user's QUEST list or the alphabetical listing of occupations.

When using the teletype terminal to access the file, the user enters EDUC followed by the occupational code number. The terminal responds by printing the Education and Training file for the occupation.

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[33] Portland, p. 35

EDUCATION File

EDUC 1132
PRESENT HIRING PRACTICES SHOW THAT EMPLOYERS ARE INCREASINGLY EMPHASIZING A COLLEGE EDUCATION FOR HOTEL MANAGERS. HOWEVER, HOTEL EXPERIENCE IS GENERALLY THE FIRST CONSIDERATION. IF YOU DECIDE TO TAKE TRAINING, REMEMBER THERE ARE DIFFERENCES BETWEEN PROGRAMS.

ASSOCIATE DEGREE LEVEL TRAINING: PORTLAND COMMUNITY COLLEGE, 12000 S.W. 49TH AVENUE, PORTLAND, 97219

THERE IS NO IN-STATE PROGRAM FOR THE BACHELOR'S DEGREE. THE NEAREST PROGRAM IS AT WASHINGTON STATE UNIVERSITY (PULLMAN, WASH.)

?EDUC 3114
JOB SKILLS USUALLY LEARNED INFORMALLY ON THE JOB. THREE TO FOUR YEARS OF EXPERIENCE IS NECESSARY TO QUALIFY AS A JOURNEYMAN. FOR TRACTOR AND HEAVY DUTY EQUIPMENT MECHANICS, THERE IS A FOUR YEAR APPRENTICESHIP PROGRAM. AN ASSOCIATE DEGREE IN DIESEL MECHANICS IS GIVEN AT OREGON TECHNICAL INSTITUTE (KLAMATH FALLS), LANE COMMUNITY COLLEGE (EUGENE), AND BLUE MOUNTAIN COMMUNITY COLLEGE (PENDLETON).

?EDUC 9426
PRESENT HIRING PRACTICES SHOW THAT ABOUT 95% OF THE EMPLOYERS REQUIRE ONLY HIGH SCHOOL TRAINING TO BE A FIREMAN. HOWEVER, ADDITIONAL FORMAL TRAINING MAY ENHANCE YOUR EMPLOYABILITY, PARTICULARLY FOR SOME SPECIALTIES IN THE OCCUPATION IF YOU DECIDE TO TAKE TRAINING, REMEMBER THAT THERE ARE MANY DIFFERENCES AMONG TRAINING PROGRAMS. BY VISITING THE SCHOOLS, TALKING TO TEACHERS, STUDENTS, RECENT GRADUATES AND EMPLOYERS, YOU CAN LEARN ABOUT THESE DIFFERENCES. GENERAL DESCRIPTIONS OF THESE SCHOOLS ARE IN 'MAPPING YOUR EDUCATION' OR 'CAREERS.'

ASSOCIATE LEVEL TRAINING: LANE COMMUNITY COLLEGE, 4000 E. 30TH, EUGENE, 97402, PH. 747-4501
PORTLAND COMMUNITY COLLEGE, 12000 S.W. 49TH AVENUE, PORTLAND, 97219, PH. 244-6111
UMPQUA COMMUNITY COLLEGE, P.O. BOX 967, ROSEBURG, 97470, PH. 672-5571
CHEMEKETA COMMUNITY COLLEGE, 4389 SATTER DR., N.E., SALEM, 97303, PH. 585-7900
LINN-BENTON COMMUNITY COLLEGE, 203 WEST 1ST AVENUE, ALBANY, 97321, PH. 926-6092
CLATSOP COMMUNITY COLLEGE, 16TH AND JEROME, ASTORIA, 97103 PH. 325-0910

For the manual system, the user refers to a bound printout of the complete file. Periodically CIS has the file for each occupation printed out from the computer. These files are then reproduced and bound in numerical order by occupational code number.

Attractiveness/Effectiveness: This file has only recently been implemented and has not been evaluated to determine either attractiveness or effectiveness. However, it was developed following many requests from teachers, counselors, and students.

EASE OF SYSTEM USAGE

Because this system is an information delivery system, every effort is made to keep its operation as simply as possible--including designing it for client use. Such an approach creates major savings by reducing or eliminating the need for staff monitors. The question is, however, how successful is this strategy? Can people learn to operate the system without training and continuous supervision or assistance? Evaluations with groups ranging from junior high school students to disadvantaged adults indicate that for most the answer is generally "yes," with a pattern not unlike that for effectiveness where the very young and the severely disadvantaged appear to need assistance. It is not surprising that these results are consistent with the pattern of system attractiveness and effectiveness, for both attractiveness and effectiveness are logically dependent upon ease of system usage. This is especially demonstrable in high school settings, but it also held true in the Portland test in Employment Division offices.

Both the Questionnaire and the Descriptions were overwhelmingly rated "easy to understand" by the students at Churchill High School who used it.[34] The number of students that used it during the five month test totaled half the student body.[35] This is a good measure of ease and attractiveness because students were allowed to operate the system at their own discretion without staff surveillance or prompting. Staff at Churchill reported very few requests for technical assistance.

The Portland test directly investigated ease of system usage. Results were highly consistent for both disadvantaged and non-disadvantaged clients. Both groups reported the QUEST questionnaire "easy-to-read." The same was true for the Descriptions; although a slightly greater

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[34] Churchill, p. 15

[35] Churchill, p. 6

proportion of disadvantaged clients reported reading difficulty with them. While ratings on other components were obtained, each was used only by a small self-selected portion of clients using the system, and cannot be considered representative sample of the overall client population who used OIAS. No difficulties were encountered by the majority of clients using these other components.

The Portland test specifically attempted to discover whether clients could operate the system independently. This was a particularly essential issue regarding the use of QUEST. Results indicate clients are willing, most are able and many prefer to operate the system themselves, with occasional technical assistance required. The Portland test has shown that it is possible to design an occupational information system which clients can operate technically."[36]

CONTINUING SYSTEM DEVELOPMENT

Modification of the existing delivery system components, or development of new ones, is dependent upon testing and evaluation and reports of difficulties or unmet needs from System users. After completion of the major evaluations referred to above, a number of modifications and developments both major and minor, have been accomplished. Thus, accumulation of evaluative data, feedback from users, and staff experience have stimulated a continuing effort to adapt, modify and further develop both the quality of the occupational information and the processes of delivering it.

Results of testing the System in Oregon Employment Division offices in Portland pointed to the need for a questionnaire more directly tailored to the needs of social agency clients. Work is now in progress on a revised occupational identification strategy which attempts to respond to suggestions for improvement noted in the Portland study in addition to incorporating some additional features not contained in the present questionnaire.

Testing and usage pointed out difficulties with some questions on the questionnaire; these have been corrected as they have been identified. The lifting question was the most recent example. Because of the wording and the coding of the question, some System users, particularly girls and women, were overstating their lifting ability and getting inappropriate occupational titles on their lists. By changing the stated weight criteria in the question from medium to heavy, the problem was resolved and the selectivity of the question was improved.

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[36] Portland, p. 14

Pilot testing and implementation of the computer version of the System has consistently identified computer down-time as a problem and a continuing source of complaint. A major step in correcting for down-time is being accomplished with the change of the OIAS program from an IBM computer to a Hewlett-Packard computer, specifically designed as a time sharing computer. This is the same type of computer used by the Multnomah County Intermediate Education District where down-time is rare.

Experience with the computer version of the delivery system has pointed out that it is not financially feasible for some very small schools and social agency settings. Either the number of students who would use it was too low to economically justify its installation and use, or it would not be used on a regular basis. In response the occupational needle-sort version was modified and improved. A major change was removal of the occupational description from the face of the card and substitution of ready reference numbers to the major information files.

Computer dumps of the occupational descriptions were obtained printed, and bound for use with the needle-sort. This change of format now provides the needle-sort version with an updating capability based on the computer files and should improve information delivery to users. However, usage of the modified occupational needle-sort and the dumps of occupational descriptions has not yet been evaluated. This is a definite evaluative task planned for the future.

Considerable staff time and effort was directed to development and preparation of a User Handbook. Essentially this handbook was developed to supplant the questionnaire and separate introduction by incorporating all the questionnaire questions and all the necessary instructions for using the System into a more attractive and efficient format. Three versions of the handbook are in use--two for the two different computer systems and one for the occupational needle-sort. Both in form and appearance, the User Handbooks are far more finished products than the original QUEST questionnaire.

While the Education file was an information component outlined in the original proposal and only recently completed, it is a kind of information repeatedly requested by delivery system users. Such user reporting of unmet informational need does indicate that users will report defects and deficiencies in the information delivery system. Since the Education file has so recently been implemented, it has not yet been evaluated. Such evaluation is planned during Phase III.

Restructuring the occupational descriptions is an improvement in informational storage and flexibility of response. The information

for each description is classified in two sections of each occupational description. The first part is the common file which includes all the information contained in the occupational description which remains true for that occupation for any area of the state. The second part contains the information about the occupation, such as employment prospects which vary among areas of the state. This format will also permit efficient user access of information for areas other than his own. This restructuring of the occupational descriptions has contributed to more efficient information development and review.

The increasing number and geographical spread of schools, agencies, and institutions using the delivery systems has led to realizing a need to develop a more efficient means of communication between CIS and those institutions. It is essential that organizations using CIS occupational information are consistently informed of additions to, or changes in, the system or system components. Consequently, a decision was made only recently to develop and publish a periodic newsletter. Presently, basic design, format, costs, and technical details are being investigated and determined. Such a newsletter will unquestionably provide greater efficiency and continuity to in-service training and system maintenance activity.

An overhaul of the accounting program to better serve two purposes is currently under way. First, it will provide a monthly report of System usage to each institution using the computer delivery system. Secondly, it is designed to provide output for CIS which will enable CIS to evaluate System usage even better. Expressly, output on the components used and the sequencing pattern of usage will become available. This program change, then, not only provides a report which fills the needs of user institutions but also information pertinent to CIS evaluation of the System.

Lastly, CIS staff has provided support for the State Employment Division in developing a set of occupational mini-guides. By using these and some occupational folders obtained from the Bureau of Labor Statistics, CIS intends to pursue some experimentation with printed materials in the near future.

SUMMARY

Both the computer and needle-sort versions of the delivery system are effective means of disseminating occupational information to individuals for vocational exploration and decision making. For most purposes the teletype terminal version is considered more attractive and efficient than the needle-sort version. Within the system itself the QUEST questionnaire and the occupational descriptions are the most widely used and rated most valuable by high school students and agency

clients. While the other components were used by only a minority of system users, each was considered as the most valuable system component by a significant portion of those who used it. Evaluation results consistently support the continuance of all present system components. Further evaluation of some components is specifically needed, and continued development and modification of the CIS information delivery system and system components are essential. While many changes that have been accomplished do not radically alter the System or any component, each one represents a distinct improvement and requires a definite amount of staff time. Additionally, while feedback from System users is a good source of information about deficiencies and defects in the System, it cannot be considered an equally satisfactory source for innovative ideas and suggestions. Continuing pilot testing and evaluation of the different versions of the System and the individual system components provide a more solid basis for pointing out worthwhile prospective avenues of further information or delivery system development or improvement.

CHAPTER V

SERVICES TO USERS

CIS provides two types of services to population serving offices who join the System: assistance in developing career information services for their clients and assistance in obtaining pertinent manpower information for use in program planning. Both the form and content of information delivery for individual career planning have been described and evaluated in Chapters III and IV. Program planning assistance will be described later in this chapter. An important complement to the career planning information in itself is CIS activity which supports and maintains on-going career planning information usage and the development and delivery of program and curriculum planning information.

IN-SERVICE TRAINING AND FOLLOW-THROUGH ON CAREER PLANNING INFORMATION USAGE

The main thrust of CIS consultation and in-service training has been development of awareness of its services throughout the state. Presentations and demonstrations of the information delivery system components, the System's capabilities and limitations to the staffs of potential and scheduled user institutions and agencies have been the principal means used to accomplish this objective.

The CIS staff made a broadly aimed effort during Fall 1972 to bring awareness of its services to the local educational agencies in the state. Demonstrations were made at state counselors', principals', superintendents', and school boards' meetings as well as to teacher groups. In addition, several meetings, generally sponsored by area career education coordinators, have been held with educators in various parts of the state. Over twenty such demonstrations and meetings have been held since September, 1972. The number of educators reached by these meetings is difficult to estimate; some of the demonstrations were attended by more than forty persons and the Oregon State School Board's meeting reached two or three hundred. An estimated one thousand persons were reached through these meetings.

Formal demonstrations of the System, which have numbered more than thirty, have generally consisted of background information on the project (slide-tape presentation), demonstration of the various System components and an opportunity for persons in attendance to personally use the delivery system to access an occupational description or two. It has been our experience that persons understand the System better after they have obtained information first hand. There is no substitute for this "hands-on" experience to convey the System's concept, the delivery devices and the information found therein.

Typical of the CIS's in-service training programs is the one held in January 1973, with staff at Rogue Community College. Rogue, located in Southern Oregon, is one of the smaller community colleges in the state with a student population of about 800. The Dean of Students had become very interested in the services of CIS the year before but was unable to find financial resources to support the computerized version of the System. In late 1972, CIS introduced the occupational needle-sort version which substantially reduced the cost and Rogue Community College was ready to go.

The Dean called a meeting of those persons who would be working most closely with the CIS's components. The group totaled six, including two members from the college's library staff and four from student personnel. He wanted one of the needle-sorts and accompanying book of occupational descriptions to be used as a resource to students in the library and the other in the student services area by counselors.

A CIS staff member started the meeting with a short "warming-up" exercise to help him get better acquainted with Rogue's staff. He then used a CIS 10 minute slide-tape presentation prepared for the purpose of giving an overview of System's concept, its development, and what it has done in various settings. A number of questions arose: Costs? How often is the information updated? How much help does a client need to use the System? etc. From these questions the CIS staff member was able to bring out the System's "Standards for Use," as adopted by the CIS Board of Directors. Within 45 minutes from the start of the meeting, the six members from the Rogue staff were divided in two groups, one member in each group working his way through the needle-sort, assisted by the other two. As each group worked, the CIS staff member moved between the two groups answering questions, pointing out techniques for using the cards, and generally clarifying various strengths and weaknesses of the System.

It was important during such an in-service to emphasize the usefulness of the labor market information being delivered by the System

as well as its limitations. As the first person at the Rogue in-service training finished his QUEST, he was asked to select one of the occupations on his list that he wanted to know more about. The CIS staff member read aloud this description empnasizing to the group particular content. The difficulty of occupational forecasting and predicting wage fluctuations was discussed. This discussion was most informative to the Rogue staff.

After all six Rogue staff members had used the System, the discussion moved toward how they could integrate the System into their career counseling program. A number of ideas were expressed and another meeting was arranged for the next day to fully set the System into operation with Rogue students.

The integration of the System components and labor market information with counseling and instructional activities is not an easy task. Generally during each in-service, the CIS staff member will stress the importance of such integration and give some suggestions on methodology. One of the major responsibilities of the user agency is to accomplish this integration.

Before leaving, the CIS staff member suggested several possible plans to publicize locally that the service was available to students. The total time for this in-service was only two hours, an adequate length of time to obtain results.

In four to six weeks, Rogue will be re-visited by a member of the CIS staff to answer questions, talk with other faculty members and generally see that the System is functioning properly and to what degree integration has taken place. This second visit appears to be most valuable in every institution or agency in which the System has been set up.

On a small scale, CIS has recently responded to inquiries from several agencies (Project RETURN, the Oregon Veterans Educational Association, the Methadone Blockade Treatment Program for drug addicts, the Lane County Association for Dependent Mothers Confidence Clinic, and the Multnomah County Community Action Program) to utilize CIS services. Demonstrations have been conducted for each of these agencies and negotiations entered into with them. To date the CIS is serving the ADC Confidence Clinic and the Multnomah County Community Action Program, and is still negotiating with the other inquiring agencies.

Extent of Present Integration of System

As stated previously, the integration of the system and labor market information with the school or agency's counseling and instructional activities is important but difficult to accomplish. There appear to be several problems that need to find resolution before such integration can take place.

In many counseling departments, the career decision-making function is so vaguely defined or so poorly understood by the members of the department, that the System appears to be a device to provide the whole function. Where this appears to be the case, the CIS staff person conducting the in-service training must educate the staff on the career decision-making process and show how the System is only an information delivery tool in this process. In more than one institution the System's installation has created a renewed sense of commitment on the part of the counseling staff to serve the career decision-making needs of their students.

Not an uncommon problem is finding adequate and effective placement of the computer terminal. Too often, student access to the terminal is limited. The System has been designed for independent student operation and has proved effective used in this manner. Some of the most effective placements have been in career information rooms staffed by student assistants and offering a variety of informational resources in addition to components of the System.

Institutional staffs are not always waiting for labor market information with open arms. However, the current emphasis on career education, the career education workshops that are involving classroom teachers and the career awareness of the public are all factors that are changing these attitudes. Interestingly enough, the concept and the delivery device of CIS has served to motivate teachers to get involved with labor market information and relate this information to their classroom activities.

An additional development to assist integration is the growing number of career decision-making classes that are being developed. Taught by counselors, these classes are beginning to meet the need of the many students who want assistance. The need appears too great to be fully met through individual counseling. These types of classes can do much to help a student understand himself, instruct him of the decision-making process, and help him find relevant sources of occupational and educational information.

At this point in time, there are approximately 70 junior and senior high schools using the System. Additionally, five community colleges and one state university are utilizing the System as part of their student personnel services. Speaking conservatively, it appears that the System will reach twenty-five to thirty thousand students during the 1972-73 school year. This represents about 15 per cent of the state's secondary and higher education population.

The penetration of CIS's services into the state's schools is illustrated by the following table:

TABLE VI: Estimated CIS Penetration

Area	No. of Students '72-'73	% of Students Using System '72-'73	'73-'74 (estimated)
Secondary School Systems			
Portland (Multnomah, Washington & Clackamas Counties)	55,000	10	70
Eugene (Lane County)	20,000	80	95
Salem (Marian, Polk and Yamhill Counties)	23,000	2	7
Eastern Oregon	10,000	5	25
Southern Oregon	24,000	--	10
Southern Coast	7,000	30	75
Northern Coast	7,000	1	5
Community Colleges			
Clackamas	1,500	33	50
Clark	1,500	15	40
Lane	5,000	30	40
Mt. Hood	4,000	10	25
Rogue	800	25	50
Others (Treasure Valley, Chemeketa, Portland, Linn-Benton, Clatsop, Blue Mt., Central Oregon, Umpqua, Southwestern)	23,000	--	10
Colleges and Universities			
University of Oregon	15,000	2	5
Others (public & private)	65,000	--	2

Reasonably firm commitments indicate that the number of CIS users in schools may triple from 1972-73 to 1973-74, rising from thirty thousand to one hundred thousand. This can only be described as an exceedingly successful first-year effort.

Equipment and Personnel Needs

There are a number of equipment and personnel needs for implementing and maintaining the delivery system.

In each agency or school where the System is operating, a member of the staff is designated to coordinate the activities and operations. With the Occupational Needle-Sort System, much less detail is needed to insure its proper use. Outside of ordering user handbooks, checking periodically the condition of the cards, and making sure the descriptions are available, little or no maintenance is required of the coordinator. His most difficult tasks are seeing that the needle-sorts are being used by students and that teaching staffs are made aware of the availability of updated occupational information.

In contrast, the coordinator in a school using the computerized version has most of the above responsibilities plus the maintenance of the computer terminal. As mentioned earlier, the placement of the terminal is important. If it is close to secretarial staff, the noise from the machine is disturbing. In addition, being too close may inhibit student use of the System, especially with marginal youth. Placement too far from the coordinator and the counseling staff may interfer with the System's natural integration with their on-going functions. The coordinator needs to be aware of these factors in placement.

The computer terminal also presents a number of operating variables (login codes, time-sharing, down times, etc.) that must be managed in the most effective manner to facilitate the system's best possible use. Although the variables do not require computer system sophistication, they do require some instruction of the terminal's operation and a conscious effort to be aware of its daily operations. Personnel from both computer facilities in the state using the CIS program have been very cooperative in assisting in the instruction of coordinators and trouble-shooting when problems occur.

To assist in the in-service training and maintenance process, especially after the initial in-service training is over, there is need for a CIS staff handbook that outlines the standards for use, maintenance recommendations, various ways to integrate the system, ways to use system components, and other items about the system. This handbook is proposed to be written in April or May of 1973 to be available for use in the fall of 1973.

DELIVERY SYSTEM OF LABOR MARKET INFORMATION FOR USE IN PROGRAM PLANNING

There is a high degree of complementarity between career planning and program planning. The best manpower and career education programs can be overlooked or misapplied unless students have clear career plans. By the same token, well-reasoned career plans may be unrealizable unless appropriate career education programs are available.

Both career and program plans require occupational labor market information, among other things, and there are substantial economies to be achieved by multiple use of data sources. Within CIS, the program and career planning information components share the same data collection efforts and library of published materials. Substantial dollar savings can be achieved by the development of an excellent resource in a joint library, rather than separate, less thorough efforts to identify and accumulate much of the same information.

The important difference between career planning information and program planning information lies in the different audiences, and thus in the different formats required for effective communication of information. Despite these different delivery formats, additional benefits, in the form of time savings, information sharing, and broadened perspectives, accrue to staff collaboration on these assignments. For example, the existing occupational descriptions (300-word statements of job duties, hiring requirements, outlook, etc.) were designed for individual use in career planning, but they find some use in program planning as well. School district vocational education coordinators have reported them to be of value as a first reference in considering program changes. Employment Service counselors have also found them useful in justifying MDTA referrals (a combination career and program planning application.)

Structure and Functions of Information Clearinghouse

The current Manpower Information Clearinghouse is the direct result of a need expressed by the Lane County CAMPS Labor Market Information Ad Hoc Committee. Consisting of representatives from local and state offices of the Oregon Employment Division, the Governor's Manpower Planning Council, the State Educational Coordinating Council, CIS, Lane Community College, Lane Intermediate Education District, an industrial realtor, and the Lane Council of Governments, the committee found that, despite an interagency

willingness to cooperate and exchange information, there was considerable duplication of effort. Furthermore, none of the agencies had continual, systematic, direct knowledge of all local data sources, much less adequate knowledge of the data needs of other agencies. Discussions with state agency officials showed that not only did they support a manpower data clearinghouse in the Eugene-Springfield SMSA but they also believed a successful operation in Eugene could serve as a pilot model for similar projects elsewhere in the state as resources became available.

The MIC was established as the unit of Career Information System primarily intended to supply and interpret labor market information to program planners. The Manpower Information Clearinghouse works principally with educational agencies, but it also serves industrial and economic development organizations and associations. This service has largely been limited to the Eugene Standard Metropolitan Statistical Area while methodologies are being developed and tested and while financial support is available from that area only. Complementary and supplementary functions include the development and operation of a library-depository of labor market information oriented to the needs of the State of Oregon and local areas within the state, compilation and publication of Oregon Manpower Studies, and identification and establishment of liaisons with local, state, and Federal manpower data-generating agencies and with educational and training establishments and agencies. In addition, the Clearinghouse coordinator serves as a resource person to the Oregon District 5 Manpower Planning Board (CAMPS committee). He also plays an active role as chairman of the Manpower Policy Subcommittee. The subcommittee is currently charged with drafting a totally revised 1974 Fiscal Year Manpower Plan for Lane County. When completed, it is expected to be the major component of an application to the Manpower Administration requesting that Lane County be designated a Comprehensive Manpower Planning Area (CMPA).

Types of Requests and Types of Institutions Making Requests

MIC is a resource for program planners in Lane County in several ways. (Administrators, curriculum coordinators, manpower program specialists and economic development personnel are all users of MIC.) By utilizing the substantial data sources of the CIS library and staff and expanding it on a cooperative basis, MIC responds to requests from program planners seeking specific information on the present and projected supply and demand for workers in individual occupations or clusters of occupations.

The chief effort of MIC, therefore, is responding to manpower information requests from a variety of agencies. Many of the requests call for limited information on a strictly defined subject--a single occupation for example. Responses to these can often be given over the telephone or within a day or two. Some requests, on the other hand, require considerable consultation, research, and report writing.

Information requests handled by the Clearinghouse vary considerably and have included the following:

a. Data sources for estimating the type and number of potential positions resulting from possible expansion of Oregon public employment programs;

b. Data on current employment and projected need in 1975 in Oregon and several local areas for five construction industry occupations;

c. Size of current demand for computer programmers and operators in the Eugene and Portland SMSA's, the State of Oregon, and in the nation;

d. Total current and projected employment in 1975, 1980 and 1985 by Oregon local and state governments exclusive of educational institutions;

e. Current and projected supply/demand for drafting and related occupations in Oregon and the nation;

f. Information on Oregon and Federal civil service personnel selection procedures;

g. Data on availability of farrier training offered together with information on cost, length of training, and employment and income prospects;

h. Data on current and projected Eugene SMSA employment for meatcutters;

i. Data on current and annual new entrant need for cosmetologists in the Eugene SMSA;

j. Identification of occupations for which a Communications and Media Cluster curriculum could be designed; provide current and projected demand/supply for those occupations in the Eugene SMSA, Oregon, Pacific Northwest, and the nation;

k. Same data for occupations in a Social Services Cluster as for Communications and Media (item j preceding);

l. Enrollment data for all Lane County post-secondary educational institutions with breakdowns in vocational education and all other programs, and the number of students from low income families in such institutions and programs;

m. Current employment prospects for combination welders in the Eugene, Salem, and Portland SMSA's, Oregon, Washington, and in the nation;

n. Occupational descriptions for four heavy equipment operator occupations;

o. Current and projected supply/demand for office machine servicemen in Oregon;

p. Prevailing wage and salary rates in the Eugene and Portland SMSA's for 55 occupations for which Lane Community College offered training programs in 1970-71;

q. Projected supply/demand in Oregon for auto parts countermen, heating and air conditioning mechanics, small gasoline engine mechanics, and graphic arts occupations;

r. Definitions of day care centers, nursery schools, and kindergartens, a comparison of training requirements for staff personnel of each;

s. Definition of a Health Services Cluster and identification of its component occupations; provide current and projected supply/demand data for each in Lane County and Oregon.

So far, MIC clients have included: career education coordinators for school districts in Lane County; directors of special training programs and instructional planning at Lane, Linn-Benton, and Clackamas Community Colleges; employment counselors in the Linn, Benton, and Eugene Employment Service local offices; the MDTA coordinator in the Eugene ES office; the manpower planner for the Lane County Community Action Agency; summer workshop committees of local educators exploring the needs for new educational clusters; counselors of the Children's Services Division, Oregon Department of Human Resources; the Eugene office of Associated General Contractors of America; and the Lane County Employees Association.

Although several persons on the foregoing list are not professional educators, most of the questions they posed were directly related to training programs.

The MIC has maintained records on 34 specific service requests. Lane Community College in Eugene, the Eugene Public Schools, and the University of Oregon have been the most frequent users, involving twelve separate service contacts. The Employment Division and other state and local agencies with manpower program planning responsibilities have also utilized MIC on a dozen occasions. Other types of users account for the remaining service contacts. (For a discussion of resources required to provide this service, see page 108 following and Chapter VII.)

As noted previously, efforts to date in providing program and curriculum planning information largely constitute an experimental phase, and expansion of the service has been intentionally limited, though potential planning information consumers have learned of CIS program assistance efforts when the career information delivery system has been presented to potential users. Since schools have been the central focus of activity, educators are the group most widely informed of MIC activities. Interest in curriculum planning information has been evidenced consistently; although specific records have not been kept, it is estimated that an additional twenty or thirty institutions--school districts, community colleges, universities, state agencies, local governments, private sector employers and associations--have expressed interest in program planning assistance, though no specific service was provided. The greatest amount of interest has been expressed by community college personnel. They see manpower information as especially helpful in building instructional programs, so they are interested in manpower training needs and local employment outlook as they initiate new programs each term in an attempt to respond to changing needs. Secondary schools expressing interest are usually interested in broader questions, e.g. which career cluster should be incorporated into the curriculum. Most interest on the secondary level is expressed by persons involved in curriculum development. The extent to which they and others would use the service, especially if they were obliged to carry part or all of the cost, is, of course, unknown at this time.

Procedures Used to Disseminate Information for Planning

Oregon Manpower Studies. This publication of the Clearinghouse is essentially a current annotated bibliography of surveys, reports, and

No.	Topic or Title	Agency (Author)	Geographic Area	Format and Availability	Survey Method	Schedule
5.	National Survey of Professional, Administrative, Technical, and Clerical Pay, June 1970 (Summarizes results of annual salary survey of selected occ. in private industry)	BLS Bulletin #1693	US	85 pp. pub. report w/ 18 tables, 5 charts, 4 appendices, text; avail. from BLS or MIC	National sample excl. Alaska & Hawaii of 7 broad industry categories w/ emphasis on larger private employers	Data based on June 1970 conditions; pub. annually
6.	Salary Rates for Municipal Employes in Oregon (Salary & wage schedules paid to city employees in Oregon in 1971; incl. job desc.	BGR&S LOC	Oregon	Public Information Bulletin #163, 77 pp., 36 tables, appendix; avail. from BGR&S or MIC	Questionnaires sent to all 231 Ore. cities w/ 191 responding incl. all over 2,500 pop.	Surveyed in Fall 1971, pub. Nov. 1971; pub. annually
	Basic Materials - General Occupational Information - Wage Supplements (I-A-4)					
7.	Fringe Benefits for Municipal Employes in Oregon (Report of city personnel practices for selected occ. as to vacations, overtime pay, emerg. & sick leaves, holidays, call-back pay, uniform allowances, reimbursement for educ. expense & private autos & physical exam. requirements, etc.)	BGR&S LOC	Oregon cities	Public Information Bulletin #165, 33 pp., 14 tables; avail. from BGR&S or MIC	Questionnaires sent to all Ore. cities w/ 191 responding; somewhat different surveys of cities over 2,500 pop. and under 2,500 pop.	Surveyed in Fall 1971, pub. March 1972; formerly combined w/ Data Source #6 and pub. annually
8.	Measuring Employee Compensation in U.S. Industry (Evolution of BLS studies tracing growth of wage supplements; shows compensation structure for selected worker grps & industries, etc.)	BLS MLR reprint #2695	US	8 pp. leaflet w/ 2 charts, 1 table avail. from BLS or MIC	Data from BLS misc. studies & US Dept. of Commerce	Latest data given is for 1968; pub. Oct. 1970
9.	Trends in Labor and Leisure (Discusses causes-shorter workweek, paid vacations & holidays, greater lifetime but shorter worklife & amounts of increased leisure; projections)	BLS MLR reprint #2714	US	9 pp. leaflet w/ 8 tables, 1 chart avail. from BLS or MIC	Data from misc. BLS studies	Data thru May 1970; pub. Feb. 1971

Sample Page From

Oregon Manpower Studies

studies having significance to the Oregon labor market (see sample page). It is intended to inform not only Oregon manpower data users but also data-producing agencies.

This publication has a distribution to nearly 150 local individuals and agencies concerned with program planning or with generating manpower data. In addition to listing and describing the content of the various data sources, many of which are unpublished but accessible to MIC and its clientele, Oregon Manpower Studies lists the author agency, geographic area covered by the data, the format (such as computer printouts, etc.), the survey methods used to secure the data, and plans for updating the study. The inventory not only includes data sources recently completed but lists those which are planned or under way, together with scheduled completion dates.

Closely associated with the compilation of Oregon Manpower Studies is the repetitive request by MIC to data generating agencies to check with the clearinghouse before launching new manpower surveys. This is not a regulatory function, but data gathering researchers recognize that sizeable amounts of dollars can be saved if they can avoid duplication of surveys. MIC points out the advantages which can result when two or more potential data generating agencies collaborate in planning and carrying out a survey on a subject of mutual interest.

Consultation methods. A few of the requests for manpower data have come from persons familiar with labor market statistics and terminology. In those cases where the client knows rather exactly what he needs, the MIC function is essentially confined to researching available data sources and delivering the information without interpretation.

However, most of the individuals placing data requests with the Clearinghouse do not have experience or training in the labor market field. With these clients it is necessary first to clearly determine the particular purpose for which data is needed. This step is crucial in that many clients tend to confuse industries with occupations and will be found asking for data for "publishing occupations" or for the "drafting industry." Through consultation, MIC has encountered and is striving to cope with a considerable communication problem between educators and their frame of reference on one side and the often complex technical terminology and the quite disparate approach of labor market reports on the other. There, the first step is always to fully delineate the objectives of the applicant, either through a careful telephone

conversation, or, as in the case of educator workshops, through attendance at one of their sessions. In those sessions the staff reach an understanding of the context for the request and communicate the concepts and resources of manpower research. This discussion often deals with elementary concepts (expansion demand, replacement demand, supply sources other than schools) as well as with difficult issues (the relationship of education to the labor market, etc.). Indeed, defining the occupations in question is sometimes the principal service performed. A more complete response is exemplified by the appended report on Draftsmen, where MIC assessed the market for Draftsmen. Although the request is almost always posed in terms of "demand" for a given occupation or cluster, attempts are made to provide whatever data may be available on the size and character of occupational supply.

MIC experience is that most inquiries, while couched as requests for data (e.g. What is the demand for draftsmen?) are really attempts to answer questions (Should Eugene Public Schools start an exploratory program in the communications and media field)? to which the data are necessary but not sufficient answers themselves. That is why MIC goes to such lengths to explain and interpret data which, to manpower economists, need no explanation or interpretation. In these consultations, the staff also avoids the naive position that labor market demand is the sole determinant of program offerings. Instead, there is an attempt to show why it is an essential part, but admit that program planners must take other factors into account as well. This stance increases the credibility more than it compromises the manpower aspect of career education.

Formats for Responding to Information Requests

Following initial consultation and definition of the information need, the Clearinghouse's next step is typically to define the pertinent occupational group, using the functional system of occupational classifications. Included in this process is the listing of the occupational titles comprising the subject group (using the titles specified in the USES's Dictionary of Occupational Titles and perhaps including occupational descriptions). Next, the current and/or projected expansion and replacement need and/or employment levels for the geographic area or areas is researched as is data on the sources of trained manpower and the rate at which it is becoming available for each occupation or occupational group. Following the data compilation, a report is drafted which includes the data just described and which also analyzes the completeness of the data and its relative

reliability. In preparing these reports the Clearinghouse makes no recommendations as to whether a training program appears to be justified or not. MIC personnel normally discuss the completed report with the client to clarify any points which may appear ambiguous and to help apply the information to the program planning decision he has to make.

Development of Standard Research Design Applicable to Many Requests

In researching a data request for a program planning client, the CIS staff assigned to the request develops a research design which involves searching the library shelves and vertical files, obtaining a current printout from the computerized occupational description files, discussing it with other CIS staff members and knowledgeable persons such as local Employment Service manpower economists, manpower analysts of the Oregon Educational Coordinating Council, and persons in the industry or occupation. A source which is regularly used is the Job Bank Openings Summary (JBOS), a monthly collection of microfiche providing a summary of the number of job openings by occupation for reporting Job Banks.

The methodology described above has been found to be applicable to most of the major research projects. The report, Occupational Report on DRAFTSMEN, (Appendix I) illustrates the format as well as the methodology used to respond to such requests. However, as noted above, responses to limited data requests are often in the form of telephone calls or brief letters.

Notification to planners of significant new labor market developments. MIC has not as yet developed effective means to routinely notify program planners of major developments in the labor market. To a degree it could be said that Oregon Manpower Studies performs part of this function. Also, MIC personnel do inform a number of clients and representatives of data-producing agencies by telephone and by personal contact of some of the recent or proposed new manpower policies, changes in manpower programs, and related developments. To date the Clearinghouse effort has been almost totally absorbed in perfecting effective ways to respond to requests. When and if staff time becomes available, CIS expects to publish a newsletter, and a regular feature of the newsletter would be brief descriptions of such developments. Despite present limitations, spreading the word about such developments is a highly desirable function which the Clearinghouse should perform but is presently unable to carry out.

Effectiveness of dissemination procedures. Consultation has much to recommend it as an information delivery vehicle, but its exact impact is hard to assess. Through consultation, manpower considerations can influence several aspects of program planning, and program planners develop an understanding of manpower concepts which they may apply in future decisions. These influences are hard to isolate. Nevertheless, it seems that the hours spent in consultation and discussion with clients to clarify terminology and their goals are at least as important as the quality of the statistics supplied to them. Generally, program planner clients of MIC have expressed satisfaction not only with the quality of the reports and information provided but also with the rate at which response is made to their requests. (Results of a survey of clients are described more fully in Chapter VI, Impact on Users, below). Nevertheless, as noted in the preceding paragraph, there is a need to broaden and regularize the dissemination of not only information about new labor market developments but also the provision of copies of formal MIC reports and abstracts or notes about less formal Clearinghouse responses to recent data requests.

A substantial criticism can also be made of the rate at which Oregon Manpower Studies is compiled and published. The original intent, though not expressly so stated, was to publish OMS on a quarterly basis. It has now been nine months since the first issue was distributed without a follow-up issue, obviously an excessive delay. While the cause is partly attributable to the complete revision of the library, and hence the OMS subject classification system, it is mainly due to the pressure of other responsibilities leaving little time available for the compilation of Oregon Manpower Studies.

Equipment and Personnel Needs for Implementing and Maintaining the Delivery System

Equipment and materials. The most substantial equipment acquisition has been the purchase of a microform reader-printer at a cost of about $1,200. Although the machine has the capability of enlarging and making prints from microfilm, its chief use is for reading and making enlarged photocopy prints from microfiche, usually the Job Bank Openings Summary (JBOS). Other microfiche information source materials which are used in the machine include the Manpower Administration's Manpower Profiles for Oregon cities and counties based on 1970 census data and various ERIC materials. Supplies for this machine apparently will average about $75.00 to $100.00 per year. CIS has received all of the microfiche used so far without cost but the unit cost for most fiche averages about $1.00 each.

Other equipment costs have been minor and include such items as small filing cabinets for library catalog cards and bookends. Various types of binders for storage of pamphlets, booklets and similar materials together with labels, etc. represent the balance of non-data source costs.

Fortunately, most of the published labor market information sources are received without cost to CIS. Nevertheless, subscriptions to such publications as the Monthly Labor Review, Personnel and Guidance Journal, and the B'nai B'rith Career and Counseling Service publications total a significant amount each year. To these costs must be added those for acquiring multiple copies of such basic reference sources as the Dictionary of Occupational Titles (including all volumes and supplements) and the Occupational Outlook Handbook as well as such BLS publications as National Survey of Professional, Technical, and Clerical Pay.

Personnel. At various points above, reference has been made to the fact that certain functions of the Clearinghouse have either not been carried out or have been delayed for lack of staff time. Without considering here the amounts of staff time required (see Chapter VII Financial Considerations), it may be helpful to note the types of personnel required to staff the Clearinghouse. These include a professional person with some acquaintance with labor market statistics, experience and training in research methods, data sources, and report writing, and an ability to communicate orally with other professionals outside his field. Non-professional staff personnel should have general clerical skills such as typing and filing and the ability to learn new procedures.

The establishment and operation of MIC in the past year was intended and carried out primarily as a pilot project not only to test the feasibility of the concept but also to develop procedures, formats, and intra-CIS organizational relationships. Therefore, a most important qualification to the foregoing statements concerning personnel and equipment needs is that the functions and services of the Clearinghouse, especially in program planning assistance, have been limited for the most part to persons and agencies located in Lane County. In some cases manpower data has been supplied to agencies outside the county, but those cannot be considered a full-fledged service. Certainly additional costs in personnel, equipment, and resource materials beyond those described above must be anticipated for a Clearinghouse that would expand its geographic area of responsibility.

With regard to the task of providing labor market information within a reasonable span of time following receipt of the request, experiences have so far been fortunate. The most urgent requests have either arrived when staff could make time available to respond, or the requests were sufficiently sophisticated and specific that little research time was required. The likelihood of an indefinite "run of good luck" on the spacing of major research requests is small. As the availability of the services and data resources of CIS become more widely known, it is probable that the frequency of such requests will increase with a resultant increase in response time.

SUMMARY

The two main types of CIS services are provided to users: 1) those consultation, demonstration, in-service training services for staff of agencies where the career information delivery system is used, and 2) those services where labor market information is supplied and interpreted to program planners. In-service training activity has been directed primarily toward developing awareness and use of CIS services throughout the state. Thus far, presentation and demonstrations of the information delivery system have been aimed primarily at the local educational agencies in the state and have been accomplished at state-wide meetings of various educational groups and at meetings specifically organized for such demonstrative purposes. An effective demonstration format has been developed which includes a short slide/tape presentation of CIS service.

The integration of the System and labor market information with school counseling and instructional activities has required special effort because of vaguely defined career guidance and counseling programs in many counseling departments. Arranging an effective location of the teletype terminal with easy access for students is a common problem. At each location where the System is operating, one staff person is designated coordinator of the activities and the operation.

The Manpower Information Clearinghouse provides labor market information to program planners through compilation and publication of Oregon Manpower Studies, a current annotated bibliography of surveys, reports and studies having significance to the Oregon labor market, and by responding to individual requests for information. Through the activity of this pilot program, a standard research design applicable to many requests and a standard response format have been

developed. Generally, program planning clients have expressed satisfaction with both the quality of response and the rate at which response is made.

While service to planners has mostly been restricted to requests from planning bodies within Lane County, the demonstration, in-service and consultation for the career information delivery system has aimed at statewide coverage. Throughout Phases I and II techniques of delivering both kinds of services have been developed and refined into consistent and effective operational formats and methods while maintaining sufficient flexibility to adapt to new or changing needs.

CHAPTER VI

IMPACT ON USERS

The Career Information System was established to meld the various available information sources, research techniques, delivery components, and client-serving institutions into a system which could assure individual career planners and manpower program planners access to accurate and useful occupational labor market information. The Oregon Career Information System has made some major strides during its short life toward putting those pieces together. Suppose it succeeds fully; suppose that a complete system of institutions and delivery vehicles is constructed that is reliable, quick, and efficient. What difference does it make? One of the presuppositions of the entire venture is that such a system would have a salutory impact on career decisions and on manpower programs. One can cite the evidence from other studies that shows occupational labor market information to be of value to decision makers, and one can argue, with regard to CIS, that it is too early to truly evaluate the impact of this emerging system. Such defenses not withstanding, one wonders what evidence there might be of CIS impact on users.

Evaluation of the respective impact of the two types of information delivery ideally follow two different lines. While labor market behavior is the ideal criterion of impact of occupational information on the individual involved in career planning, no such standard is available for assessing the impact of information delivered for program planning where client satisfaction with the quantity, quality, pertinence and timeliness of the information provided must suffice. However, since major implementation of CIS services is still underway, the extensive investment of resources involved in studying labor market behavior of individuals using the System has not been undertaken. In spite of this fact, an extensive amount of evaluative data have been assembled about client use of the career information delivery system. Similarily, a proportionately lesser amount of evaluative data was gathered from program planning clients.

In looking for impact, it is necessary to examine the two thrusts of CIS independently. Though much of the information content can be the same and organizational integration is advantageous, format and delivery mechanisms must obviously be tailored to the differing needs and capabilities of the individual planning his or her career and the person planning programs and curricula. Thus, this chapter describes separately the current evidence concerning impact of career planning information and program planning information activities on respective users. The impact of both activities results not only from the content of the information, but the means or process used to deliver it to the user.

IMPACT OF INFORMATION ON INDIVIDUAL CAREER PLANNING

The ultimate measure of impact will involve an assessment of the labor market behavior of users of the System, and there are some very preliminary indications of such impact. However, most of the currently available information pertains more to the impact of CIS in completing the information flow. It describes the reactions of individuals to the ready availability of such information, but is incomplete as to the more permanent consequences of their use of that information.

Much of the evidence of impact on career decisions comes about as a result of extensive research into the effect of the information delivery system. Other evidence is more anecdotal. To an extent, the effectiveness of occupational information is dependent upon users finding it readily available, attractive, interesting, and easy to use. Attractiveness certainly has been responsible for much of the popularity and wide usage where the System has been tested and permanently installed. Moreover, as has been noted previously, the information and its delivery processes are complementary aspects of the same information delivery process, thus it is most often exceedingly difficult if not artificial to distinguish the impact of the information per se from the impact of the total delivery system, which includes information delivery components, and user needs. Thus the substantial available research concerning the delivery components is pertinent to a discussion of impact. At this point, that research can be supplemented by reference to other cases, but final analysis of impact must await completion of Phase III of the CIS project. Evaluation of experience to date has demonstrated not only the total System's attractiveness to users and user institution staff, but also its effectiveness as an aid in career decision-making. That kind of attractiveness and effectiveness determines in part the extent of its impact on users.

Types and Amount of Information Supplied for Career Decision Making

Because information is delivered through the various information components and media, individual users decide the type and amount of information they receive. The vast majority of System users utilize the worker trait and labor market information underlying the questionnaire, and most access information on a variety of occupational topics through the occupational descriptions. A small yet significant proportion make use of published information and opinions of individuals through the other information components. This basic pattern of usage directly determines the type and amount of information supplied to the individual System user. However, regardless of the kind and amount of information obtained by the individual, the form and extent of information potentially available to any system user depends upon the content, format and quality of the information contained in the System.

While these aspects of information content and delivery format have been described and discussed in Chapters III and IV of this report, there are other important aspects of the quantity and quality of the occupational information supplied. Since most individuals using the System utilize the questionnaire, the resultant list of occupational titles obtained constitutes an important piece of information itself. The personal relevance of the information delivered is an overall feature of the delivery system which imparts a similar quality to the occupational information supplied. Evaluation has amply substantiated this effect. The delivery system provides a flexible format for easy access to the different information files which facilitates organized occupational exploration. It also provides information in satisfactory units and amounts. Evaluation of student and client usage indicates that the amount of information delivered at particular points and in the different components is largely commensurate with the amount of information desired by the user from that component or at that particular point in the process.

For some the information contained in the occupational list is sufficient; for others one or two occupational descriptions suffices, and yet others want or need the detailed information contained in the Bibliography and Books or Education file. Thus the user controls the amount supplied and delivered, and results indicate a satisfactory balance between each additional amount of information desired and the amount delivered by the System. Thus, at no point is the user inundated with too much information which would be confusing, yet the amounts and detail of the occupational information supplied are adequate to meet the user's needs.

Results of system usage previously described in this report point out that the System is easy to use, the information is easy to understand and personally relevant, and the majority obtain the information they were seeking.

Effects on Special Client Groups

The information available through the System is both attractive and effective with a wide range of different kinds of persons or clients. In early pilot testing the System was reported as very effective with a wide variety of types of clients. Some counselors said it was most valuable with young, disadvantaged, unmotivated clients (VRD, Churchill); others pointed out its value for: bright and articulate college students (U of O), slow high school students (Churchill), people with some idea of their goals (LCC), people with no idea what they want to do (VRD, LCC), returning servicemen (LCC), and potential college students (Lebanon ED).[1] In later testing in Employment Division offices it was only slightly less attractive to and effective with disadvantaged than non-disadvantaged clients. However, a number of counselors thought that clients with low abilities, the severely disadvantaged or clients with very low reading skills are the persons helped least by the System.[2] Recent pilot testing has included NYC enrollees, WIN enrollees, women participating in an Aid to Dependent Children Association Confidence Clinic and elderly persons seeking employment. Results of this pilot testing with these groups is tentative yet consistent with previous evaluation.

High school students. High school students use the System extensively when it is available for their independent use. This is a consistent and extremely important finding from tests of the System in the schools.

Interest in and use of the System is high and seems not to wane among high school students. Terminal use records for Churchill High School in Eugene indicated that the System was used 441 times during

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[1] Bruce McKinlay and Larry Ross, Evaluation of Occupational Information Access System Use in Six Pilot Agencies, University of Oregon, Eugene, Oregon, 1970.

[2] Jerry Weick, Occupational Information for Employment Service Counseling: An Evaluation of Occupational Information Access System Pilot Use in Three Portland Employment Division Offices, University of Oregon, Eugene, Oregon, 1972.

the System's first four-week test in 1970. About a third of the student body used the System, most more than once. Counselors observed students waiting in line for an opportunity to use the System, and one counselor estimated that students used it about 75 percent of the school day.[3]

Churchill's counselors wanted the System kept at the school. They were impressed with the multi-media approach, the appeal to the students, the high student usage, and its value as a tool in the education process. Due to the extremely favorable results at Churchill, further testing was conducted where student reaction was explored more fully.[4]

This second test at Churchill High School lasted for the five months between January and May, 1971. During this time about half the student body (between 500 and 600 of the 1,040 students) used the System. Most users made repeated use of it. The average number of times the System was used per student equaled 2.3, and the average total time the student spent using the System was somewhat over one hour.

A significant factor in assessing the information system's attractiveness for students is the fact that there was practically no publicity given to the System. Students learned about the System by "word of mouth." Further, there was no organized instruction on how to use the System. Students learned how to operate it from written materials available in the room or from each other. Considering the lack of publicity given the System, it is impressive to note that only 10 percent of the student body had not heard of it.[5]

The System's attractiveness seems to continue, even after the novelty has worn off. At the conclusion of the evaluation period in September 1971, the System was implemented at Churchill on a permanent basis. During the 1971-72 school year the System was used a total of 372.2 terminal hours, enough time to serve virtually the entire student body of Churchill. This pattern is continuing and is apparent in other high schools as well. In the month of November

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[3]Six Agencies, p. 9.

[4]Six Agencies, p. 19.

[5]Bruce McKinlay and Daniel Adams, Evaluation of the Occupational Information Access System as Used at Churchill High School, Bureau of Governmental Research and Service, University of Oregon, Eugene, Oregon, 1971.

1972 (the last full month for which CIS has data) the System was used 43.3 hours at Churchill, or by approximately 130 students. This followed two separate pilot tests and a full year of extensive use.

The continued use demonstrates the lasting appeal of such information to students. There is some accompanying evidence of a growing sophistication in the use of labor market information by students to whom it has been available for several years. One piece of evidence is the fact that the use and their choice of a "best part of the System" shifts from QUEST to the occupational description files where greater amounts of information are stored. There seems also to be an increasing use of supplemental information.

At Churchill High School counselors reported that OIAS was an excellent tool for learning. One counselor noted that the questionnaire showed students that there is not just "one right occupation" for a person, but that most people could do well at several different jobs.

The fact that each student was provided with a printout of his list of occupational titles, which he could tear off and take home to his parents, was seen as a valuable aspect of the System. This was shown in the later study at Churchill, where a survey indicated that two-thirds of the students who use the System take materials home and discuss them with their parents. Parents reported spending an average of 47 minutes discussing career plans with their children as a result of the material brought home. Parents generally exhibited an accurate impression of the purpose of the System and thought that the services the System provided were important enough to warrant its permanent usage in all secondary schools in the community. Clearly, the System was effective in stimulating communication between parents and students on the important topic of career planning.[6]

The first evaluation at Churchill pointed out that students can and will use the System without any staff encouragement, assistance, or monitoring. Counselors at Churchill agreed that the students' independent usage was constructive and beneficial.[7] "One of the aspects of OIAS which is attractive to students is the private, independent use which can be made of the System. Students have expressed a liking for this facet of OIAS over and over again." "Under the unmonitored arrangement at Churchill, there was not a single incidence of loss, breakage, or vandalism. Moreover, analysis of independent student usage has demonstrated that students

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[6]Churchill, pp. 55-56.

[7]Six Agencies, p. 20.

do not need assistance in operating the teletype terminal or other equipment used with OIAS."[8]

Results of the later study at Churchill High School indicated that "while OIAS was influential with students, it had little impact on established instructional programs. Only about 9 percent of the student body used OIAS in connection with a class assignment and the bulk of that use was by the career education teachers and counselors."[9] Yet, the System is, and can be, effectively used within an instructional program. At Churchill one instructional innovation, which made considerable use of OIAS, was a short-course called "Careers and Values." This course provided an opportunity for students to examine their own interests, goals, and preferences and the relevance of career choice. The teacher-counselor indicated that students liked OIAS best of the class's several activities and that he planned to use it more intensively in this course the following year. All faculty who used the System said it made it possible to use more information in instruction which they would not have used otherwise.[10]

Although to the reader it may appear that Churchill High School students are somewhat unique in their receptiveness to the System, in fact, they are not. Several other Lane County High Schools are using more computer time on the System than Churchill during the 1972-73 school year. This may be partly attributable to their larger school populations; it proves that when students and staff become aware of the System's capability and availability, they use it!

During January of 1973, a CIS staff member visited a large high school on the outskirts of Portland which had been using the System only two months. He was surprised to find students on four computer terminals engaged with the System and students standing in line behind each. Upon inquiry, he was informed that the school had been particularly successful in promoting the System through the student newspaper on its arrival and had been almost inundated with student requests for use ever since. Such demonstrable activity not only points to the students' liking for the process and content of this System, but to their desire for occupational and educational information. Traditional career guidance methods have not and are not getting

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[8] Churchill, pp. 48-49.

[9] Churchill, p. 4.

[10] Churchill, p. 33.

the job done! Systems such as this must be developed nation-wide to meet this obvious need by students of better information.

Junior high students. Interest in and use of the System among junior high students is consistently high where the System is easily available to students and where the staff encourages its use. A cursory study of the user records from 41 secondary schools in Lane County for the month of February 1973 demonstrated the following: (1) Junior high schools appear to log as many hours of computer time on the System as high schools in Lane County; (2) In two school districts, the junior highs used the System significantly more than the high schools.

Looking at just the number of hours of computer time is only a part of the total picture. The Oregon Board of Education, professional counselor groups, and local school districts in the state are placing special emphasis on career exploration programs through the mid-school years. Particular programs such as SUTOE (Self Understanding Through Occupational Exploration) are being supported through state-wide workshops. These programs encourage students to: (1) explore key occupational areas and access their own interests and abilities; (2) become familiar with occupational classifications and clusters; (3) develop awareness of relevant factors to be considered in career decision making; (4) gain experience in meaningful decision making; and (5) develop tentative occupational plans and arrive at tentative career choices. What the System can offer in career information as well as with the exploratory questionnaire, QUEST, is seen by Oregon educators as both complementary and vital to these emerging programs. These instructional innovations at this mid-high level are a most significant development in Oregon education.

Data collected from small-sample evaluations at Shasta and Jefferson Junior High Schools in Lane County are consistent with findings at the higher level. Results on a "job information test" indicated that junior high school users not only scored better on the objective questions about job duties, earnings, and educational requirements for a pre-selected list of occupations but were able to list twice as many occupations as non-users. These findings strongly indicate that some learning took place as a result of using the System.[11]

College students. Testing at Lane Community College was conducted during the 1970-71 school year. In this evaluation many users

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[11]Churchill, pp. 25-26.

were attracted to OIAS who did not have a recognized need for information. However, once they started working with the terminal, these users would become interested in the information they were generating.[12]

Another test site was the University of Oregon Counseling Center. There, the System was used by clients almost solely after personal contact with a counselor or in connection with a Career Analysis class. The four University counselors who were involved with the evaluation stated "definitely yes" when asked whether OIAS should be kept at the University of Oregon.

As in the Churchill High School and Lane Community College situations, four counselors went on to note that as clients became more involved with the System they became very serious and objective about it. The counselor who used OIAS with his Career Analysis class noted that students took their individual printouts to class, exchanged them with others, and compared and discussed the various results. He further mentioned that these students returned many times to the terminal, told others about the System, and generally became very excited about the System. The System is now permanently installed and utilized extensively in conjunction with the career counseling program at the Counseling Center.[13]

The counselors at Lane Community College agreed that, with the installation of the CIS terminal, they were more likely to use occupational information and felt they generally made better use of the occupational information than they had previously. "Three of the four said that the System saved them time previously spent looking for information, but they were unable to estimate the amount of time saved.[14]

A study comparing OIAS to the Lane Community College Counseling Center in terms of their abilities to deliver occupational information to students concluded that:

> OIAS's purpose is pure occupational information delivery; interpretation of the information delivered is left to the individual user. Counselors, in contrast, deliver occupational information plus counsel and advise students as to what the information means and how to interpret it.

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[12]Larry Lynn Ross, The Effectiveness of Two Systems for Delivering Occupational Information: A Comparative Analysis, Master's Thesis, University of Oregon, Eugene, Oregon, 1971.

[13]Six Agencies, pp. 45-46.

[14]Six Agencies, p. 40.

> Despite this difference in System roles or purposes, every attempt was made to objectively compare OIAS and the Counseling Center in terms of their effectiveness in delivering occupational information. Study results indicate that OIAS is at least as effective, and definitely more efficient, as an information delivery system.
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> The ability of OIAS to deliver occupational information more efficiently and much less expensively than a counseling staff does not mean that OIAS should be substituted for counselors. In fact, OIAS would be a poor substitute for a college counselor, since it serves only the purpose of information delivery. Counselors, whose tasks typically involve personal advising as well as delivering occupational information, could benefit from using OIAS to obtain information. The time previously spent filing occupational materials and searching through innumerable information sources could be spent offering personal human advice to college students.[15]

Some information is available about the larger question of impact on community college students. In the evaluation at Lane Community College, ten percent of the students reported changing their career plans as a result of using the System, and 28 percent claimed that using the System increased their sense of certainty about their career plans.[16]

Employment Division clients. In an early test of OIAS at the Eugene Employment Division office 18 clients were introduced to OIAS; this constituted about 10 percent of the clients counseled during the test period. In general, the counselors at the Eugene Employment Division found the System unattractive. Counselors did not like the terminal's noise. The terminal was located in a room designated as a "library" and they felt its noise was incompatible with the function of a library. Consequently, counselors favored removal of the System from this agency.[17]

This early testing at the Eugene Office produced the only overall negative response to OIAS in any of its tests. Counselors typically allowed clients to use the System completely independently after the

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[15] Two Systems, pp. 83-84.

[16] Two Systems, pp. 60-61.

[17] Six Agencies, p. 29.

client was given a brief explanation. Those who introduced the largest number of clients to OIAS found that clients encountered few, if any, problems, but the counselors were generally antagonistic toward the System, claiming that OIAS is dangerous and that any occupational information is frequently inappropriate for severely disadvantaged clients or clients with special kinds of problems.

Comments were elicited from counselors in other test agencies on the "potential danger" of OIAS and their opinions offered no support for this contention.[18] There appeared to be some lack of clear communication between project staff and Employment Division counselors which raised an impression that possibly the System did not get a fair test.[19] In the evaluation of OIAS in three Portland Employment offices, no counselor indicated that the use of OIAS had adverse effects upon any clients.[20]

The prototype of the occupational needle-sort version was tested at the Lebanon Employment Division office. Results there indicated: "The computer is not essential to effective functioning of OIAS. The needle-sort card system effectively demonstrates the consequences of individual question responses, and provides good access to occupational information."[21] Both the counselor and users at Lebanon stated that the card-sort system gave users a wider selection of occupations and started users thinking on a wider scale giving them some new occupations which they would consider seriously.[22]

Attractiveness of the System was indicated by the fact that the Lebanon office manager and the two counselors took an intense interest in it. They added references to their other occupational materials to the bibliography and made some interview cassettes themselves. Even though this was a limited test, it indicated that both counselors and clients found the manual system attractive enough to warrant further testing and development.[23]

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[18] Six Agencies, p. 28.

[19] Six Agencies, p. 30.

[20] Portland, p. 11.

[21] Six Agencies, p. 5.

[22] Six Agencies, p. 37.

[23] Six Agencies, pp. 36-38.

TABLE VII

CLIENTS WHO INDICATED
THEY WOULD USE OIAS AGAIN
IF THEY NEEDED JOB INFORMATION LATER[24]

Total, All Clients	95%
Non-Disadvantaged	99
Disadvantaged	91
Computer	94
Card-Sort	88

The attractiveness of OIAS for Employment Division clients was assessed in a major test of the System in three Oregon Employment Division offices in Portland. In this evaluation a distinction was made between non-disadvantaged clients and disadvantaged clients. Two questions were asked of the users: First, whether they would use OIAS again if they needed job information sometime in the future. The second question asked was whether the System should be kept at the Employment Division. As the table above demonstrates, the responses were extremely positive to both questions, and included card-sort as well as computer based versions.

Both answers show a strong pattern of demand among clients. It is significant to note the very high proportion of disadvantaged who responded with strong positive ratings.

In the comparison of the needle-sort and computer versions of the System, the card-sort proved less effective in getting users to read the descriptions than the computer version; yet both were effective.

Counselors reported that the terminal was easier to use with clients. "Ten of the seventeen counselors participating in the test preferred the computer version and thought it was more effective than the card-sort. Only one counselor expressed preference for the card-sort version, saying she personally liked the card-sort better, but the computer was in fact a more attractive, effective version for her clients. The remainder remarked that each version has some advantages and disadvantages, but most of them considered the computer version more efficient."

[24] Portland, p. 8.

TABLE VIII

CLIENTS' RECOMMENDATION ABOUT KEEPING OIAS AT THE EMPLOYMENT DIVISION[25]

	Non-Disadvantaged Clients	Disadvantaged Clients	Computer Group	Card-Sort Group
Defintely Yes	60%	49%	60%	47%
Yes	39	49	39	49
No	1	2	1	4
Definitely Not	0	0	0	0

(92% of the clients responded)

"The main advantage cited for the card-sort was its greater effectiveness in showing the client what was happening in the sorting process and how each response affected the outcome. The most frequently mentioned disadvantage of the card-sort was its cumbersomeness. Cards tended to stick together and sometimes didn't drop out properly.[26] To facilitate the cards dropping out, the current version of the occupational needle-sort system uses a slicker stock for the cards.

As the Lebanon test demonstrated for the needle-sort, so a counselor stated about the computer system: "I think it affected the client's attitude by helping him to see that there is a far wider range of possibilities than he may have originally considered; this is one of the real strengths of the System."[27]

In the Portland Evaluation most counselors indicated that while OIAS did not reduce the amount of time spent in counseling a client, it brought more information to bear and made more alternatives available within the same amount of time. "Since more information and alternative choices were available to OIAS users, more exploration resulted."[28]

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[25] Portland, p. 9.

[26] Portland, p. 44.

[27] Six Agencies, p. 41.

[28] Portland, p. 6.

Thus, OIAS amplified the decision-making process and tended to introduce more order into the occupational decision-making and counseling processes by allowing counselors to concentrate on counseling and not on information delivery.

Special client groups. Several special client groups have used the System. These groups include enrollees from the Neighborhood Youth Corps, Work Incentive pre-employment group, women from the Lane County Aid to Dependent Children Confidence Clinic, and retired persons looking for part-time employment. A full evaluation from these special client groups was not made. Often the number of users were too few to draw a reliable sample or resources were not available from either the CIS or the user agency to perform rigorous evaluation. However, results from these special client groups do help specify and delineate what has been found from full-scale evaluations of OIAS.

Neighborhood Youth Corps. The System was used with 121 Neighborhood Youth Corps enrollees from three Oregon counties, Deschutes, Tillamook, and Umatilla, during the summer of 1972. The enrollees were transported to sites within each county where an OIAS terminal was located. At each site there was a person trained in the use of the System to work with the enrollees. Results of pilot usage were obtained verbally and in writing from the respective NYC field supervisors and from evaluation questionnaires completed by some NYC enrollees. Because of different conditions of usage, results varied from county to county.

Overall, NYC supervisors and the NYC state director concluded that the System made a positive contribution to the NYC program. Dr. Kiesaw, NYC Project Director, indicated his intention to use the System again next summer with NYC enrollees and also to develop a plan whereby results can be forwarded to enrollee's local high school counselor to provide follow-up and continuity during the subsequent school year.

In Umatilla County 30 enrollees participated and responded to an evaluation questionnaire. Responses of the 20 female enrollees form a positive overall pattern highly consistent with results of prior field tests. The ten male enrollees responded less favorably. (These young men were described by the NYC supervisor as "very marginal types.") All indicated both the job descriptions and the questionnaire were easy to read, and the majority who used the System reported that it helped them make job plans.

In Tillamook County NYC enrollees were given the General Aptitude Test Battery in the morning and then used OIAS in the afternoon. Comments of enrollees were critical of the teacher who administered the test and the length of the testing process. Length and classroom setting factors clouded results of system usage. Evaluation indicated, however, that three-fourths benefited.

Use with NYC enrollees in Deschutes County resulted in the local NYC supervisor requesting an appropriation of funds from the state project director to make the System available to the program on a 12-month basis. The Deschutes County NYC Field Supervisor saw it as "a highly valuable service for the population segment with which we are concerned in NYC.

From these results with NYC it is apparent that the System is appropriate for and helpful to NYC enrollees. However, the mixed results of pilot use indicate a need to better determine the context of its use in NYC. It appears that development of some basic guidelines for OIAS usage based on the experiences with the enrollees in the three counties where it was used would enhance its effectiveness and produce more consistent results.

Work Incentive Program. The CIS services were tested with a six member Work Incentive Pre-Employment Motivation Group. The members of the group were considered job ready, but at the time of this involvement in the group, they had not found employment. Plans had been made to work with several of these groups in order to obtain some information about the place in the evaluation and training cycle of social service clients where occupational information is of the most value, and to develop an effective model for delivering occupational information to such clients. However, staff cuts in the Employment Service terminated this experiment.

The WIN counselor concluded from this limited experience that it would have been much more beneficial for the enrollees to have used the System when they were first making their choices about occupational goals, rather than after they have been classified as job ready. He went on to state, however, that occupational choice is not a one-time activity, but people should have an on-going opportunity to explore the world of work and re-examine their decisions. To do so, people need the kind of information and format for their decision making that CIS provides.

The counselor stated he found that bringing small groups (3 or 4 enrollees at a time) to the terminal was an effective way to work with the System. He found that the users gave each other feedback as they worked on the terminal and with the other System components

i.e. the cassette interview tapes and Bibliography and Books. Utilizing the System in this way opens opportunities for dialogue between clients and between clients and the counselor.

Three of the six users reported that the System helped them make job plans. Five of the six stated that the questionnaire gave them some new job titles to consider for future work. The person who answered "no" to this question is one of the persons who stated the System helped her make job plans.

As in the other evaluation, unless the use of the System leads to a very specific decision regarding employment plans, users often say it did not help make job plans even though they also say it gave them some more options to consider.

ADC Association. The Lane County Aid to Dependent Children Association is operating a Confidence Clinic for women who are receiving assistance from the Children Services Division of the Department of Human Resources. The clinic director is using the CIS occupational needle-sort system to supply the women with occupational information and as the primary tool in the clinic's career counseling program.

She has experimented with two methods of using the System with small groups of women. In one setting (the first group to use the System) the director sat down with the women and went through the System with them. This resulted in the women looking to her as the "expert" and they in turn did not learn much from the experience.

In the second model the director went through the entire process of showing the women the System (card deck, description file and bibliography). She gave some background to QUEST, explaining how a person's occupational options were affected by the way they answered the questions. She then turned the System over to the group to work with as they wanted. The result was that the women within the group began to help each other. One person would use the card deck while another would work with the descriptions and other would discuss their responses to QUEST and what would happen if their answers were different. This model has been used with several subsequent groups with like success.

This activity led the women to examine their decisions more carefully in terms of occupational opportunities and to utilize occupational information in their decision-making process.

HELP. A limited version of CIS's information delivery system was also tested with a small sample of persons (15) from the HELP project. Help Elderly Locate Positions (HELP) is a non-profit employment referral service for persons 55 or older. The card-sort system was used to see if it would generate a list of new occupations of interest to older persons.

To insure that each individual would understand the meaning and intent of each question, the researchers worked with each HELP registrant and reviewed the questionnaire with him. After completing the questionnaire and going through the card-sort system, each registrant evaluated the process. Overall impressions were positive. All 15 stated that they had held at least one job which was included on their list. They found the process and the information interesting and worthwhile.

While none of these on-going pilot uses is fully conclusive, each test contributes some elaboration and detail to the firm base of full scale evaluative data. As CIS concentrates more on delivering information in varying social agency settings, adaptability of System usage to different client groups continues to be an important consideration. These experiences with NYC, WIN, and other client groups help further development of attractive and effective format and System usage. A fuller evaluation of the impact of CIS on users will be made following Phase III.

MAJOR OBSERVATIONS ABOUT CAREER PLANNING PROCESS

The extensive field testing of the occupational information delivery system has produced some observations about the career planning process. While evaluations have focused on assessing System effectiveness in delivering pertinent occupational information, these evaluations have also produced some observations about career planning and decision-making processes.

First, it is clear that not everyone interested in occupational information or involved in career planning wants counseling. In the Churchill High School Study only a minor portion of students who used OIAS used it in connection with a class assignment or with counselors.[29] When the System was pilot tested at Lane Community College, it was found that students used it for a variety of reasons, including curiosity, recreation, class assignment, and on recommendation of teachers and counselors, while 34 of 35 students who used the

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[29]Churchill, pp. 4-6.

Counseling Center cited a personal need for occupational information as their main reason for seeking counseling.[30] Both groups were satisfied with the information obtained and the process of obtaining it. Much pertinent occupational information was received by students who, for whatever reasons, did not seek counseling.

Clarification of the distinction between counseling and information delivery is a corollary observation. Results of the Portland test in State Employment Division offices showed that when OIAS was used as a discrete part of the counseling process, "it tended to introduce more order into the occupational decision-making and counseling processes.[31] A major difference between experimental and control groups in the Portland study was that the same counselors were to treat information delivery more explicitly with OIAS users than with control group clients who received occupational information only when the counselor recognized a need for it within the on-going counseling process.

The impact of the System in facilitating greater ordering in the counseling process points to the definite need for some occupational search strategy. As reported in the Portland study, usage of the QUEST questionnaire and list had an educative aspect apart from information content. Users became aware of more factors involved in career choice and how such factors affect occupational options.

Exploration should be considered a distinct step in occupational decision making. Most persons who use OIAS do so for purposes of exploration. Curiosity about the search process and satisfaction with new ideas and alternatives pointed out by the System are consistent findings borne out by the Portland study and the Lane Community College study. Thus, System usage enriched the occupational decision-making process by stimulating exploratory activity. Results of the Portland study indicated that the exploration process was not only enriched but amplified in time. The greater quantity of readily available information allowed for more exploratory activity.

The Portland study, which included a high proportion of disadvantaged persons, provided evidence that disadvantaged persons tend to follow a distinctly different decision-making process. "Many

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[30] Two Systems, p. 36.

[31] Portland, p. 6.

disadvantaged clients claim to be job seeking and thus seem to be more decided and definite about their occupational choices, whereas the majority of non-disadvantaged clients used OIAS to help decide what occupation to follow." The disadvantaged saw the purpose for using OIAS as confirming a prior decision; non-disadvantaged saw it as information gathering for long-term planning and decision making.[32] Non-disadvantaged persons are more aware of the variety of occupations and the complexity of the choice process, and are more receptive to "planning." Disadvantaged persons in general have less occupational information, they form their choices from a much more restricted range of alternatives, are much more definite, and have less patience with planning.

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[32] Portland, pp. 51-53.

IMPACT OF INFORMATION DISSEMINATION FOR PROGRAM PLANNING

The other major function of CIS is supplying and interpreting labor market information to manpower program planners. The information disseminated through this service system is not prescribed by the system but is tailored to the particular need of the program planner initiating the request, consequently the amount and type of information varies from request to request. (Specific examples are cited and discussed in Chapter V where the delivery of information for program planning is discussed.) To the extent that one can generalize, it seems that the greatest amount of attention in these requests relates to labor market supply and demand factors.

The one exception is, of course, the publication Oregon Manpower Studies, which delivers information about on-going and recently completed manpower studies which either deal explicitly with Oregon or are likely to be of value to Oregon manpower program planners.

In order to evaluate the impact and effectiveness of CIS research and consultation services to planners, a telephone survey was recently conducted by the manpower planner for Lane Council of Governments and the Manpower Information Clearinghouse Coordinator. Client reaction to the prepared reports and services were quite favorable. In the survey, where approximately half of the clients served were contacted, the following types of comments were received:

a. All stated that the data provided by CIS was what was needed, with the qualification in some cases that they wished more data were available.

b. To the query as to whether the information was understandable, all clients agreed it was. In some cases it was necessary for CIS personnel to spend considerable time with clients to clearly identify their needs as some educators tended to confuse industries with occupations.

c. Each of the respondents stated that the CIS data was actually used to help reach decisions even though in one or two cases the decision made was not supported by the data (other factors were deemed more important.)

d. Data supplied by CIS contributed to decisions by clients as to whether to undertake new or to retain existing educational programs. CIS generally refrains from making

recommendations on the adoption or non-adoption of programs, because manpower data constitute only one element in such a decision.

e. Clients indicated that the information supplied by CIS was objective and unbiased. In those cases in which only limited data was available it was provided with a cautionary note that it was incomplete.

f. Not only did all clients indicate they would again avail themselves of the CIS service in the future, but one submitted another request for data during the interview and a second is mailing in a request.

g. The only suggestions offered to improve the service were to publicize more its availability and, hopefully, to spur data-producing agencies to expand their surveys so as to gather and report data not now available.

(Respondent clients providing the above information included:
James Holst, Career Education Coordinator, Eugene School District
Paul Colvin, Assistant to the Director of Institutional Research and Planning, Lane Community College
Jeff Hannum, Manpower Economist, Oregon Admin. District 4 (Corvallis), Employment Division, Department of Human Resources
Lee Ann Ernandes, Manpower Planning Coordinator, Lane Council of Governments
Terry Rawlins, Manpower Planner, Lane County Community Action Agency
Dr. Dee Martin, Director of Instructional Planning, Linn-Benton Community College
Gilbert James, Teacher, North Eugene High School and Chairman of Workshop Committee on Social Services Cluster
Abdullah Tarzaban, Teacher, Churchill High School and Chairman of Workshop Committee on Communications and Media Cluster
Jaquelyn Anderson, Career Education Coordinator, Eugene School District
Creighton Harrison, MDTA Coordinator, Eugene Office, Oregon Employment Division)

Two of the longer reports prepared by CIS in the summer of 1972 were responses to requests initiated by Eugene School District teacher workshop committees. Each of the committees had been commissioned

to explore the feasibility and characteristics of possible new educational programs in the social services careers and communications careers clusters. In each instance the CIS reports were incorporated in toto in the formal reports made by the committees to the four directors of education and to the superintendent of the district. In the case of the social services careers study, the workshop committee endorsed the approach, arrangement, and identification of the specific occupations included in the CIS report as being feasible for adoption in both the exploratory and skills training programs of the Eugene district. The second committee also approved the CIS format but recommended that the implementation of the cluster be limited to the exploratory educational program. The recommendations of the committees were accepted by the directors of education of the school district. Plans for instituting the new educational programs in the 1973-74 school year are now in abeyance pending the arrival of a new school district superintendent and the allocation of funds.

In another instance, however, prompt positive action resulted upon the receipt of a CIS report. The Eugene Employment Division office, Lane Community College, and the local MDTA committee needed hard information concerning the character and extent of the local demand for operating engineers, a highly unionized occupation. Acting on data supplied jointly by CIS and the local ES manpower economist, the committee approved and recommended MDTA sponsorship and funding of a program to train some 20 disadvantaged men in this occupation at the college. Before formal approval of the MDTA program was authorized by the State level Employment Division office, Lane Community College decided to establish the course as part of its regular curriculum. The first class of 20 students has recently completed training and at least 10 students obtained employment within the first two weeks in the occupations for which they received training.

The local MDTA committee used data furnished by CIS on the manpower demand/supply relationship for combination welders to supplement existing data to recommend establishment of two welders training classes at Lane Community College. The training was authorized and the first class of nine trainees completed their course in January 1973. Of the group, six are now employed in welding jobs and another is employed in a non-training related job.

At Linn-Benton Community College decisions have been made to initiate programs to train students for careers in graphic arts occupations beginning in the Fall of 1973. Other courses that will train mechanics in heating and air conditioning installation and repair and in the maintenance of small gasoline engines will be taught in the Spring of 1974. On the other hand, the college decided not to institute training for the auto parts counterman occupation. In each

case the decisions were reached after considering data developed by CIS in response to a request from the college.

When a staff member of the Lane Community Action agency received a complaint alleging discrimination against disadvantaged minority students by post-secondary educational institutions in the county, CIS was asked to provide recent enrollment data identifying the number of students from low income families and their proportions in vocational versus all other educational curriculums. The information provided by CIS did not support the complaint, and the Community Action agency did not pursue the matter further.

The consequences of other CIS responses to requests for labor market information have been varied but in no instance, to our knowledge, has data furnished by CIS been ignored. Often the information has been used immediately. Such was the case when CIS collaborated with a local Oregon Employment Division manpower economist on developing a list of occupations for which there is an apparent current surplus of labor. The manpower economist then relayed the information to his state level office. In another instance the Oregon Economic Development Division requested current wage and salary rates applicable to ten occupations significant to a glass manufacturing company which was considering locating a plant in Oregon. The data developed by CIS were immediately relayed to the company together with information pertaining to raw materials supplies developed by the Development Commission. Unfortunately, the latter information resulted in an adverse decision by the company.

One measure of the utility of vocational educational curriculums is the relative income received by workers in the occupations for which training is offered. CIS was requested by Lane Community College to develop data on prevailing wage and salary rates in the Lane County and Portland metropolitan areas for 55 occupations for which the college had provided training during the 1970-71 school year. This CIS data was incorporated into a comprehensive study by the college of the effectiveness of its vocational curriculums.

In some cases, the impact of CIS is harder to measure. The consultation with the Eugene Public Schools social science workshop is a case in point. This group of teachers initially questioned whether there should be any direct relationship between the social science curriculum and career education. Following discussions with several experts, including lengthy consultation sessions with CIS and presentation by CIS of manpower data indicating the large size of social service employment, they concluded that the establishment of a social services

exploratory program should be pursued and that high school students should examine such topics as industrial psychology, sociology of work, industrial organizations, major manpower producing institutions, and other such topics in existing social science curricula.[33] Only the first of these two conclusions can be directly related to manpower data assembled by CIS, but the latter may ultimately have broader impact.

These selected examples are illustrative of the types of influence which manpower information can have on program planning, when it is compiled in forms that are directly pertinent to particular program planning decisions and presented in a consultative mode. To have these effects, however, the incomplete stock of manpower data must be utilized creatively, tailored to a particular decision and interpreted, to some extent, for people who are largely unfamiliar with the vagaries of such data.

Oregon Manpower Studies has received favorable responses from its users. Clients contacted about this bibliography of available manpower studies made the following comments about this CIS publication:

> "Uses the report and feels it is of great value as a reference for staff and students"--Dean James Kelly, University of Oregon School of Community Service and Public Affairs
>
> "Uses it limitedly but feels it is valuable"--Hartley Troftgruben, Director of Career Education, Springfield School District
>
> "Used it for curriculum planning and found it very useful"--James Holst, Career Education Coordinator for Eugene School District
>
> "Uses it a great deal"--Earl Vossen, Career Education Coordinator, Bethel School District
>
> "Doesn't personally use it"--Clarence Eklof, Manager of Eugene Employment Service Office
>
> "Would like more minority information"--Jack Steward, University of Oregon Personnel Director

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[33] Eugene Public Schools, IXG Social Services Careers Study (Eugene, Oregon: Eugene Public Schools), 1972.

"Uses it for reference and refers other people to it: it could be more comprehensive"--Dennis Miner, Manpower Economist in Eugene Employment Service Office

"Has used it only once; feels it is positive, but would not favor expanding it"--Larry Murray, Lane Community College Director of Special Training Programs

"Gives him very good services; uses it a great deal and feels it is reliable and accurate"--Bill Manley, Lane IED Director of Career Education

"Uses it a great deal and finds it very valuable"--Wes Morgan, Nils B. Hult and Assoc., Industrial Developer

There are three major limitations to the impact of this service currently, most of which seem to be more apparent to the staff than to the clients of the service. One is the serious shortage of usable occupational supply data, notably the paucity of information about the labor market behavior of occupational program graduates at all levels. Lack of such data limits the conclusiveness of any supply-demand analysis. The second limitation is the current provision of this service to a single geographic area and the lack of resources to extend it statewide. The third limitation is the current lack of means for initiating information flows to program planners. Only the first is creating major problems for the present service format, though the latter two limit the overall impact on program planning in the state. All three will be addressed during CIS's Phase III.

SUMMARY

Delivery of CIS information to individuals involved in career planning and to program planners is filling definite needs and having significant impact. While there has been no attempt to measure the labor market behavior of career information delivery system users, there is ample and significant evidence of impact on individuals involved in career planning. Since the information is received through a delivery system, it is difficult to separate the impact resulting from information content from that created by the delivery process. However, extensive evaluation of System usage has assessed both elements. The System is usable by nearly any client, attractive and effective with a broad range of kinds of clients, and satisfies their information needs.

The individual chooses the amount of information received from the total amount potentially available in the System. Satisfaction with the quantity, quality, and format of the information received is consistently high with the vast majority of persons using the System. System users not only get accurate, relevant occupational information, but also indirectly learn about the occupational exploration and career decision-making processes. The delivery systems installed in the schools have had continued high volume usage over time but have had only a moderate effect on instructional programs. While the main impact has occurred in school settings, since this was where most CIS staff effort was concentrated, pilot testing in a variety of settings has found the System effective with Employment Division clients, Vocational Rehabilitation clients, NYC and WIN enrollees, elderly persons, college graduates, and disadvantaged persons. Three major observations of the effects of the delivery system on the career planning process include the following: 1) not everyone wants counseling; some mainly want occupational information; 2) exploration is a distinct step in the career decision-making process; and 3) disadvantaged persons in general follow a distinctly different decision-making process than non-disadvantaged persons.

CIS information delivery for program planning has also had a definite discernible impact. Publication of Oregon Manpower Studies, an annotated bibliography of studies pertinent to Oregon, has drawn consistently favorable response as a general purpose source of information. Service of specific information requests was surveyed. Results indicated: 1) CIS data was what was needed, 2) the information supplied was understandable and useful for decision-making, 3) response to requests was timely, and 4) all clients would reuse CIS services but 5) CIS services to planners should be publicized more. Satisfaction of clients with both types of CIS services is indicative of the impact of CIS information on users.

Chapter VII

FINANCIAL CONSIDERATIONS

Two principles underlie the financial side of the Career Information System's development. One is that the Career Information System will devote its resources to activities that will bring together various unrelated research and information activities into a "system," with a special emphasis on the delivery of information to individual career decision makers and manpower program planners. Thus, emphasis is placed on information development and delivery rather than on original research. The second principle is that the System should be developed in such a way that it can be sustained in the long run by the institutions it serves. Attention to this principle has prompted the project to direct its attention, particularly its early attention, to activities which directly address the glaring needs of school and agency clientele for efficient and attractive delivery of the most essential types of occupational information on an individual institutional basis in preference to activities that require a sustaining budget from a central source.

The analysis of this chapter is limited because the project is only halfway through its development. It is still experimenting with alternative ways of achieving efficiency in production and has not achieved its full economies of scale. Thus, this report can be only a preliminary accounting of the financial considerations involved in completing the informational flow, with some observations about the longer run.

In considering what should be said about finances, it is important to recognize that CIS is operating among existing institutions, information sources, and services. CIS attempts to act as a coordinating intermediary in bringing those pieces together, filling gaps, in order to complete a system. It is appropriate that this report deal with the incremental costs of completing that flow of labor market information from data producers to decision makers. This chapter will therefore discuss the financial aspects of the activities undertaken by the Career Information System itself. These are obviously not full-cost

estimates, either to the participating institutions or to society, nor is it a cost-benefit analysis. On the one hand no attempt is made to estimate the costs to existing data-producing agencies of their ongoing research activities which are utilized by CIS, for those activities were not instituted for CIS. Obviously, termination of those activities would at least create major new types of data development costs for CIS itself if not make such a system both financially and technically infeasible. A parallel situation exists with regard to population-serving institutions. CIS does not provide direct counseling services nor does this report attempt to estimate the costs of those services, even though they are an integral part of the total information delivery system.

Just as this chapter does not constitute a complete cost analysis, so there is no attempt to estimate the very real economic costs attributable to the current "non-system" or the savings which will be achieved from coordination and gap closing. There is ample evidence, some of it cited in Chapter II, for the proposition that the extent to which there is no system there are substantial social costs. It also results in significant under-utilization of much of the occupational labor market knowledge which is developed.

While this chapter does not attempt to answer those larger questions, it does present the project's analysis, on the basis of experience to date, of the incremental direct costs involved in its efforts to complete the linkages between data producers and decision makers.

INFORMATION DEVELOPMENT COSTS

Acquiring Specific Data

Acquiring data for use in the information system takes essentially three forms: (a) the initiation and maintenance of continuous data flows from data-producing agencies to the CIS; (b) identification of sources such as libraries which are efficiently used elsewhere than maintained at CIS; and (c) sources which must be developed and utilized as part of the information development process itself. The second involves little or no out-of-pocket cost to CIS, while principal costs of the latter are staff costs and will be discussed in the next section dealing with information development costs. Thus, discussion here will center on the first type.

Developing and maintaining even a small special purpose library such as CIS's, involves management and materials acquisition costs.

In this instance start-up costs were quite significant. As was noted in Chapter III, it was necessary to design a library filing system, undertake substantial ordering of materials, catalog both the new and the sizable existing inventory of materials, formalize materials acquisition and review procedures, and familiarize the staff with the use of the library. All of this required approximately three man-months, spread over a nine-month period. Largely because CIS has been able to obtain the Job Bank Openings Summaries and receives some other reports in microfiche rather than hard copy format prompted the project to purchase a microfilm reader printer, at a cost of about $1,200. There are machines on the market for only a few hundred dollars, but not with high quality image at various magnifications and with a printing capability.

As for ongoing costs CIS is able to rely on other libraries for most journals and books, and many data-producing agencies have tended to make information available at no cost to CIS when they might require reimbursement from others. These facts have kept acquisition costs at the remarkably low level of only a few hundred dollars per year, though this figure would rise with more intensive information development activities, particularly by an expanded program planning effort.

Storage involves no other unusual costs beyond those expected in any such library using open shelves and filing cabinets. There is, of course, need for library file boxes, notebooks, labels, and other filing devices, since much of the information comes in the form of articles, short reports, and data tabulations which are not neatly bound for storage. The cost of these materials totaled about $100.

Cataloging, filing, and re-filing, as well as ordering materials which must be purchased and writing for cost-free items are ongoing staff costs, which have involved various amounts of staff time, but are expected to require perhaps one-third FTE, nearly all clerical, on a continuing basis.

The other aspect of data acquisition discussed in Chapter III is the continuous contact with data-producing agencies required to maintain and insure complete and consistent flow of information to CIS and to seek new additional sources of labor market information. Regardless of the source and nature of the data, the flow of data to CIS is neither automatic nor evenly continuous. Consequently, in order to have accurate, current, and comprehensive manpower data for the effective functioning of the career planning information system and of services to program planners, it is essential that CIS staff

resources be continuously committed to the search for and the acquisition of additional labor market information in addition to maintaining the existing flow of data. As the data are received, the materials must be classified, catalogued, and shelved in the library. This is one area in which more staff effort is required than CIS has expended, perhaps in the order of one-half FTE, distributed among various members of the staff.

The level of library activity described here has proven to be relatively satisfactory, given the ready availability of many costly materials in other more comprehensive libraries. Two general notations should be made, however. One is that the library of available information is seriously incomplete in some areas, not for lack of a library budget, but for lack of information in those critical areas. Most notable, as is discussed elsewhere in this report, is the lack of supply information, the lack of adequate wage information, the lack of substantial information about the relationship of education and jobs, and certain other topics where materials would certainly be purchased if that information were available. One could well expect the library budget to double if the desired information were available for the nominal price of a publication.

Another feature of this particular collection should also be noted; it involves very little computer storage of research data for use by CIS information development staff. This fact is principally attributable to the fact that CIS is currently developing very little original labor market data, and it generally proves more efficient to use the data storage and processing facilities of data-producing agencies rather than to create duplicate files at CIS. Thus, a system which would attempt to be comprehensive in developing its own data storage capabilities would need to make budgetary allowance for this kind of data storage, manipulation, and retrieval.

Information Development Costs of Individual Career Planning Information

Having discussed the acquisition of data and reports for storage in CIS, we can turn to the matter of actually developing information. These costs are, of course, primarily in the form of staff time, some of which can be viewed as start-up costs while others are the ongoing costs of maintaining the currency of information files. Start-up costs are of two principal types: the development and testing of information maintenance procedures, including the necessary forms and work flow designs, and the building of the information files themselves. Obviously both, though particularly the latter, are a function of several variables, including the number of files, the number of occupations, the number

of geographic areas to be covered, and the frequency of the update schedule, to name a few. The importance of taking explicit account of these factors in planning an information maintenance program is described in Chapter III.

CIS was extraordinarily fortunate as it faced the task of preparing information files. The Oregon Employment Division already had an exceptionally well-developed program of occupational employment estimates and projections, probably the second or third best in the country. Skill surveys had recently been updated in both Eugene and Portland, the first two areas where CIS built information files. Two key CIS staff members had occupational labor market research experience with the Employment Division and elsewhere. CIS inherited the information which had been developed under a prior project for the purpose of testing the computerized occupational information system. CIS had the benefit of advice and assistance from the Oregon Employment Division's manpower economists stationed in cities throughout the state. Moreover, CIS information development activities grew gradually from the initial two files, so the staff was not required to build complete sets of files for all the areas of the state simultaneously. Therefore, CIS information development staff was able to devote a relatively large portion of its time to procedures design and testing rather than file building.

Even so, the 1.5 FTE budgeted for the six-month developmental stage was barely adequate to get the information development program operational. This is partly due to the fact that CIS assumed an ongoing information development commitment to Lane County schools in addition to reformatting the information in the existing description files and thoroughly reviewing the other files, which had been developed for testing purposes and not as a foundation for continuing large scale usage.

While CIS start-up activity in this area required about 1.5 FTE plus part-time clerical support, another such project starting from scratch, should expect to at least double that initial investment. The development of information for a large number of geographical areas, or the use of inexperienced personnel, would require at least a 50% lengthening of the developmental stage as well. This matter of staff experience is important in planning such a project, for the labor market contains very few people with the desired profile of experiences. Though many manpower economists have appropriate background, they would require training and experience before reaching high levels of productivity, and training and experience take time.

It seems to many people who are completely unfamiliar with labor market research that, once these files are built, it should be a simple matter to stick in a new figure now and then. As a matter of fact, "sticking in a new figure" is an easy matter, but knowing what figure to stick in is something else again. Occupational labor market information is a perishable commodity that requires skill, sensitivity, and time to develop. Moreover, special care in writing, not only for technical accuracy but for clarity, is also necessary when one is writing for large numbers of people in diverse institutional settings.

Even more than initial information development, cost is a function of the number of files, occupations, and areas for which information is being developed as well as the detail, accuracy, and currency desired in the information statements.

Despite the very large number of information items which must be maintained in a large system, there are substantial economies of scale possible in such an operation. Certain files and parts of other files can serve whole states or possibly even regions. With time and increased staff (up to a point, of course) methods improve, staff proficiency increases, and there is opportunity for improved division of labor. Moreover, there is opportunity for multiple use of data, for example, between career planning information and program planning information development efforts which reduce average unit cost. In time, too, one would expect an operation like CIS to have some feedback effect on data-producing agencies, making it possible for them to improve the substance or form of their output for this particular purpose, again increasing productivity.

The current career information development program of CIS, as described in Chapter III, requires about 3 FTE, though CIS's current staff is somewhat below that level. That staffing level assumes that data are available, that staff are knowledgeable, and that staff can concentrate on this special area of work and will have the benefit of cooperation from data-producing units.

In considering this matter, it may be useful to examine somewhat more closely a few of the particular costs involved in the information gathering activities which are part of information maintenance.

Contacts. Contacts with persons knowledgeable about the occupations is a common way of gathering and verifying labor market information. Typically this is done via telephone.

The costs of doing research with the telephone have two sources: the analyst's time and the telephone toll charges. Both are potentially high expenses; however, telephone contacts rarely exceed ten minutes. In part, this is done out of courtesy to the telephone contacts; time spent on the telephone potentially represents down time for them. At the same time, ten minutes also corresponds to the approximate amount of time needed to complete the inquiry.

As far as telephone toll charges are concerned, the statewide "TEL PAK" and "WATS" services are supported by the University where the project offices are housed. Since that represents a fixed cost to the project, the expense of using the telephone to make what would otherwise be toll calls is no greater for many than for one call. It is therefore not costly in terms of telephone tolls for the CIS to do some of its data gathering from various parts of the state by telephone. While actual time on the telephone rarely exceeds ten minutes, the analyst must devote more time than that to the entire process. Locating the best possible source, completing the call, and processing the information has typically added at least another ten minutes to the process.

Newspaper Help-Wanted advertisements. The responsibility for classification, tabulation and technical interpretation of these data has been assigned to a student research assistant. The assignment is extremely instructive in that it enables the researcher to develop a familiarity with the classification system in a fairly short time period. In the process, he develops a rich understanding of the classification system, its advantages and weaknesses. Because of its instructional value, the task could well be assigned to new staff members.

Currently, the time required to process the data is as follows:

TABLE IX

Publication	Average Number of Ads	Time Per Week
Sunday Oregonian	640	3.5 Hours
Sunday Register-Guard	200	1.25 Hours

Job Bank Openings Summary. The data from this source are provided to CIS already tabulated, so the basic information development cost is nil. However, time is required to maintain statistical series integrity (check on non-arrival of fiche, fill in gaps in data, verify or correct apparent data errors) and to maintain graphs and tables. This requires about one day per month.

Information Development Costs of Program Planning Information

Program planning presents some different problems. CIS program planning activities are of a consultative nature, requiring the capability to be responsive rather than to set and maintain a regular work schedule, as is the case with career planning information development. The major needs are for data resources and for available trained staff. The financial considerations involved in the development and maintenance of data sources were discussed above because they apply to both career and program planning information. Those, plus staff orientation, were the major start-up costs for this Manpower Information Clearinghouse service component. While the major efforts in program planning assistance and the general service strategy had already been worked out by an ad hoc committee of the Eugene Area CAMPS Committee, staff training and introduction to the major clientele of the service, i.e., career education coordinators, CAMPS committee, etc., absorbed a significant portion of the coordinator's time, perhaps 0.5 FTE, for the first six months.[1] In addition, as early requests were being worked, considerable attention was paid to the design and review of report format, explanations needed, etc. (See Chapter III for details) This perhaps doubled the time required to respond to those early requests, but resulted in approaches and formats that enhanced the usefulness of the reports and ultimately led to shorter response times.

In considering the cost and staffing required for program planning assistance, the reader should remember that this represents a pilot effort, concentrated largely in one labor market area. Costs reported here are based on this experience, and the discussion contains no estimate of costs for a full statewide service. Such financial considerations are to be worked out in Phase III. Here the emphasis has been on effective methods of meeting such requests, even in a single area, and their associated costs.

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[1] CAMPS Labor Market Information Ad Hoc Committee, Proposal for a Manpower Information Clearinghouse for the Eugene Standard Metropolitan Area, (Eugene, Oregon: Lane Council of Governments), January, 1972.

Although some of the data requests are quite specific and can be serviced in an hour or two, many require a much more complex response involving many days of staff time. Instances of the latter usually call for one or more conferences with the client to ascertain his objectives and to define the scope of the inquiry clearly. This is followed by the research and drafting of a report. One or more supplementary conferences with the client to present and explain the draft report are common. The final report is then reproduced in quantity to meet not only the client's needs but also to distribute copies to others who have expressed an interest.

As an ongoing activity, information development in the pilot area has absorbed about one-third FTE in directly accountable time. (Another one-third FTE is spent in consultation. See discussion below.) To this must be added administrative and clerical staff support plus the time consumed in consultation with other staff. These represent about a 20 percent addition to the basic costs.

The one "reguiar" product directed toward program planning is Oregon Manpower Studies, the bibliography of recent studies of major value in Oregon. This function is closely related to the acquisition of data, and involves identification, compilation, and publication of a bibliography. This entails periodic contact with labor market data producers and those persons or agencies who may make surveys or studies on an occasional basis to ascertain not only what studies have recently been completed, whether published or not, but also those which are planned or are in process. Compiling and editing a recent issue of this bibliography required about one man month of professional time plus about two weeks clerical time. Again, it is expected that this time will be reduced as formats and procedures are standardized. There are two unresolved financial problems that accompany this program planning information service. One is the uneveness of the work flow. Requests do not arrive at an even pace, and available response time is frequently too short to permit scheduling, so there are periods of overload and slower periods when the work being done is not directly chargeable to a particular request. Larger staff size, even with proportionately larger request load, and experience by both staff and users would ameliorate this problem.

The other financial problem is that user institutions do not budget for such planning consultation, as a general rule, in the way that they budget for architectural services to help plan facilities. Consequently, financing such a service on a strictly reimbursement basis has severe limitations. This problem and the alternative solutions will be explored more fully during Phase III, when methods have proven sufficiently satisfactory that the "pilot" nature of this service can be changed.

Aside from computer operating costs, CIS has personnel costs associated with the operation of the computer. Despite efforts by state agencies to centralize computer facilities, it appears more likely that each major institution will have its own small system. The implication for CIS may be that the program will ultimately be housed on a number of computers in various parts of the state. If so, the costs of programming, updating, and management will rise proportionately and might ultimately require a full position to handle this activity.

COSTS RELATED TO DISSEMINATION OF LABOR MARKET INFORMATION FOR PROGRAM PLANNING

It has been noted previously in this report that the delivery system for program planning information differs markedly from the delivery system for career planning information. It is more passive, responding to requests as they arise from program planners rather than taking a major initiative in the dissemination of information. It is also considerably more labor intensive, with staff consultation being a major vehicle for determining the parameters of the inquiry and for disseminating results.

The more mechanical components of the delivery system consist almost exclusively of telephone costs, xerox costs, and report printing costs. Telephone costs are entirely conventional, with the single exception that calls anywhere in the state represent a fixed cost, due to the staff's location at a state institution and the resultant access to a statewide telephone network. Xeroxing articles and other materials proves to be a useful way to supplement and to follow up reports prepared by the staff. A modest budget for that purpose, in the neighborhood of $100 for the pilot area, strengthens the dissemination capability. Printing is the most expensive of this type of dissemination cost.

Reports of the type shown in Appendix I, which average about fifteen pages, cost approximately $80 to produce in quantities of 100, including materials and labor required for printing, binding, and distribution. Thus, an annual budget of $1,000 should be adequate to cover this dissemination item.

A much greater cost exists in the form of personnel time expended on consultation with users. This is an extremely important aspect of the total service and generally represents an expenditure of time roughly equivalent to the time spent on research, though the mix obviously differs greatly from one request to another. Thus, during the recent past, the project has expended about one-third FTE for the dissemination component of the program planning effort in the Eugene pilot area.

COMPUTER SYSTEM COSTS

The Career Information System has made a practice of contracting for computer services from established educational computer centers. Presently, the occupational information delivery system is operating on three computers at two centers. One is the Oregon Total Information System, which is operated by the Lane Intermediate Education District for schools throughout the state. That center operates the program on two computers, an IBM 360/50 and a Hewlett-Packard 2000-F. The other center is operated by Multnomah County Intermediate Education District under the title METCOM, for schools in the three counties of the Portland Metropolitan Area. There the system operates on a Hewlett-Packard 2000-C computer.

Any computer system capable of supporting a teleprocessing system would be adequate to operate OIAS. Also needed is direct access storage and sufficient main memory to run the OIAS program. Currently, on the IBM-360, OIAS requires about 15K (1K = 1,024 bytes) of main memory. The IBM hardware on which the System is operating is an IBM 360/50 with teleprocessing capability. Terminals are TTY33's. Of course, this system is much larger than needed to support OIAS.

For the IBM 360/50, OIAS is written in IBM Assembler Language. (OIAS could be re-programmed in almost any language.) OIAS files require about 1.5 million bytes of direct access storage. Files are accessed using IBM's ISAM. This version currently utilizes the OTIS file maintenance system, and hence has some dependency on this system. However, changes could quite easily be made to make OIAS independent of that system.

On the Hewlett-Packard the OIAS software is written in Time-Shared Basic and requires 3,000-3,500 blocks, which is approximately one third of the minimum system configuration using one cartridge disc drive. This includes all programs and files which are used to update and maintain the OIAS files. The Basic program is compatible with and will run on the Hewlett-Packard model 2000-C.

Costs of operating the OIAS program are not distinguishable from the costs of operating the entire Hewlett-Packard computer, which include other programs as well. However, an indication of the approximate magnitude can be ascertained from the fact that the rental price, including maintenance for the Hewlett-Packard model 2000-F with one cartridge disc drive, is $3,200 per month, or $67,200 per year. Personnel requirements with this computer are minimal and OTIS has budgeted $82,000 for one year's operation, including hardware, software, and personnel.

COSTS OF WORKING WITH USER AGENCIES

The Career Information System is by design a cooperative effort, involving a great many established institutions, particularly client-serving institutions such as schools and social agencies. Neither the development nor maintenance of such cooperative arrangements is cost free, and one of the strengths of the CIS proposal is that it recognized this fact and provided funds to carry out the essential consultation and in-service training. There are two major types of costs which need to be examined in this connection. First are the costs of consultation, planning, and in-service training required to make a career planning information service operable in a school or social agency; second are the costs of equipment and materials which are related to the number of users and represent a continuing cost of operating the system.

Start-up costs. The start-up costs can perhaps best be seen by looking at what transpired in one particular case. Coos County, located in the southern coastal area of the state, is principally rural with lumber, shipping, and agriculture being the main export industries. Coos County has a population of 56,000 and high school students number 4,500.

Discussions with Coos County educators began early in 1972. The CIS Director and another member of the staff spent a day at the county's Intermediate Education District office talking to the superintendent, the Career Education Coordinator, and other personnel. The District's Career Education Coordinator later spent a half-day at the CIS office talking with various personnel and getting a better look at the System's operation. During a month in the spring, the System was demonstrated to students and staff at one of Coos County's high schools. CIS absorbed all costs related to the demonstration.

Various phone calls were made through the Summer of 1972 discussing costs, ways of funding, and various components of the System. In early October, two members of the CIS staff spent a day in Coos County and made a formal presentation to the Coos County School Board to obtain their financial commitment. Support was obtained, and in early December two members of the CIS staff again spent a day in Coos County conducting a two and a half hour in-service training session with school personnel from the eleven secondary schools. An additional day was spent on site in early January visiting several of the schools in an attempt to assist in integration.

To estimate roughly, almost $1,000 was spent in travel, phone calls, computer costs, and staff time in the consultation and in-service

training effort for Coos County. The largest portion of this amount, approximately 80%, was incurred in the consultation, planning and decision-making process. This expense is exclusive of the cost of localizing information for that region or developing user materials.

It should be apparent that, here again, cost varies substantially from one situation to another, but Coos County is a reasonably "typical" situation for a first year effort. It is not at all clear yet how much continuing in-service training and other consultation will be required to maintain adequate service. The CIS Board has taken a strong posture in favor of thorough in-service training so costs can be expected to continue. In Lane County, for example, new in-service training sessions have been held each fall that the System has been in effect, in order to insure that old coordinators are brought up to date on System developments and that new coordinators are well prepared to handle their responsibilities. During the last six months, when much of the work with schools has been done, CIS has devoted two FTE to this consultation, planning and in-service training for cases where individual schools (or even individual classes within schools) as well as small social service projects decide to implement the System.

Costs Related to Numbers of Users

This brings us to the topic of costs directly related to the number of individuals who use the System. Costs which are variable are the delivery system costs.

Computerized version. Obviously, user costs depend on the intensity with which individual students and clients use the System. Evaluation data indicate that students use the System two or three times per school year. Employment Service clients typically used it only once during the pilot testing and averaged about 40 minutes with it.

It cost a "typical" school or agency which installs a terminal and uses the computerized version of the System with approximately 1,500 users about $2.00 per user per year for terminal costs, line charges, and computer time. An institution which utilizes an existing terminal for the delivery of occupational information adds only the cost of computer time, and that averages approximately $1.00 per user. To these costs the user institution must add approximately 30 cents per user for printed materials (User Handbook, Bibliography, books, etc.).

Needle-sort version. The occupational needle-sort version of the System carries with it two costs; the costs of the needle-sort deck and the printouts of occupational and educational descriptions. When the needle-sort version went into school use recently, it was assumed that a deck would last a school year and quarterly updates of the descriptions would be sufficient. A deck and four description books cost about $50 to produce. Thus, classes or projects serving a very small number of users can get a version of the System for less than $2 per user per year, and that cost drops well under $1 as the number of users reached the optimum for a single deck of cards. Needle-sort users must also add the cost of printed materials, which range from 30 cents to 50 cents per user.

None of these figures, of course, includes the costs of information development, consultation and in-service training, or continued System development which are described elsewhere.

Manpower Information Clearinghouse User Costs

The costs of program planning research and consultation are hard to average because of wide variations in costs of individual requests. Even though experience and improved methods produce time savings, the costs of responding to requests for labor market data have, as might be expected, varied widely. Those few requests which require only a few minutes to look up published data for a single occupation may involve a total expenditure of less than $5.00. Some written reports, on the other hand, have required two or three extended meetings with clients, as much as 60 to 80 hours of research and report drafting time, plus secretarial and reproduction costs; in those cases, total costs approach $450. Costs of the magnitude just cited are not likely to recur, because research methodology and report formats have now been largely standardized. Even so, rendering this research and consultation service takes considerable time.

FEE SCHEDULE FOR SERVICES

Both the plans for and the implementation of the Career Information System have been based on the proposition that agencies who utilize the System should provide the financial support for it as well. This strategy is based on both practical and theoretical considerations: no state agency has funds to fully underwrite such an operation, and user agencies can be expected to demand higher performance of the System if they are paying its costs.

Fees for Career Planning Information System

In developing fee schedules and working with schools and agencies, CIS has made no attempt to recover developmental costs when such developmental costs were borne by a grant-making agency. In calculating the costs of establishing the continuing service to user agencies, the CIS Board has adopted the policy utilizing existing information, delivery, and staff development services whenever effective, feasible, and otherwise consistent with the goals of the System. Thus, the CIS charges user agencies only the cost of goods and services, (including such items as information development, delivery system operation and management, evaluation, and System refinement) required for the effective delivery of services agreed upon.

To implement this general policy, the CIS Board adopted the following fee schedule for the developmental stages of the project: fees are to be figured on the basis of $1.00 per estimated potential user up to 3,200 users in an institution, and 30 cents for each additional user thereafter. The interview cassettes produced by the project are made available to user institutions for the cost of reproduction, $1.00 per cassette. Additionally, user institutions must budget for the costs of the delivery media, usually computer costs. (See the following page for pricing schedule.)

There are many considerations concerning school and agency budgeting procedures and timetables, as well as CIS cost factors, which underlie this schedule. There is a need to respond to extreme disparities in program size, ranging from as few as twenty users in some situations to tens of thousands in others. There is also a need to utilize budgeting concepts which are familiar to user institutions. Additionally, there is a need for the fee schedule to reflect the flexibility of the information system. This particular schedule was adopted in order to encourage institutions to make the fullest possible use of the System and to group together for System use, while still taking account of its costs.

Information development, consultation, and in-service training. In this schedule, 70 cents of the $1.00 which is charged for the first 3,200 users in an institution goes toward the cost of basic CIS services, i.e., information development, in-service training, etc. Costs of providing such services are obviously not infinitely variable with the number of users, and it is also apparent, as has been discussed numerous times previously in this report, that there are substantial economies of scale to be achieved. Though it is difficult to estimate and to allocate these costs on a per user basis, the extreme size variability of different users requires some such approach.

PRICING SCHEDULE 1974-75

SERVICES AND DELIVERY SYSTEMS AVAILABLE TO CIS USERS

The following schedule applies to all users of CIS services, including I.E.D.'s, community colleges, individual schools and social agencies.

SERVICES	DELIVERY SYSTEMS
CIS Services $1/user for first 3,200 estimated potential users; $.30/user for each user over 3,200 ($100 minimum).	Users of the OIAS computer system also pay OTIS or METCOM for computer services.
CIS service includes: 1) CIS Coordinator's Handbook(s); 2) Updated and localized occupational and educational information; 3) CIS Newsletter "Update;" 4) CIS In-service training; 5) User Handbooks; and 6) Follow-up services.	Occupational Needle-Sort at $45 each (Includes one set of occupational and educational printouts).
	Additional Occupational Description Printouts at $20 per annual subscription* (price for System users).

LIMITED SUBSCRIPTION SERVICE AVAILABLE TO LIBRARIES, INFORMATION CENTERS, AND OTHERS

Occupational Description Printouts
at $50 per Annual Subscription

*Annual subscription includes three issues of the local area occupational description printouts.

It is clear that this schedule does not provide full support for these services, particularly in the early stages when the number of users is limited; thus it is necessary to subsidize information development and other services in the early stages in order to maintain the desired level of quality.

User materials. Printed materials that are consumed in the process of using the System consist principally of User Handbooks, Bibliography, and reports which are purchased for use with the System. These materials cost about 30 cents per user. As can be seen, the above schedule provides for full cost pricing of the materials. There are substantial savings inherent in large printings, so this figure might ultimately decline, but it is approximately correct for quantities in the order of magnitude of the present system.

Delivery media. In addition to CIS services and user materials the System requires delivery media, meaning either computer services or needle-sort deck and computer printouts. The principle being followed in regards to these costs is that users pay the full cost; in the case of computer services they contract directly with the computer service bureau. The fee schedules of the two major computer service bureaus and the fees related to the needle-sort version of the System are described below.

System delivery costs are highly dependent on the location and the delivery method chosen. For those institutions chosing the computer terminal as their major delivery medium, there are three costs to consider: terminal time (the amount of time the terminal is accessing the computer), phone line charges, and rental of the terminal itself.

In the Portland area a school or agency can contract with the Multnomah County Intermediate Education District for unlimited computer time at a cost of $2,750 for 9 1/2 months or $3,250 for 12 months. Agencies and schools which have a limited need can obtain computer time at $4 per hour. Experience has shown that an individual will use about one-half hour of computer time per year (though he might spread that time over several uses). In any situation, the user institution must also pay telephone line costs and terminal rental charges. If an additional unlimited business phone line is needed, the cost is $19.75 per month in the Portland area; a terminal and its related equipment rents for $65 per month.

In Eugene and other parts of the state, users access the System via a computer at Oregon Total Information System (OTIS). OTIS does not have a flat rate contract available for their customers; instead

they charge $4 per terminal hour for agencies using only the Career Information program, $3 for those who also use OTIS accounting programs. Line charges and terminal rental range between $85 and $150 per month, depending on the distance from the OTIS computer.

The occupational needle-sort version (needle-sort deck and printouts) enables the CIS to serve schools and agencies whose size, location, budget, or preference prohibits the use of the computer system. The CIS supplies the needle-sort at cost to its users. About $25 is spent to produce one card deck and about $5 is needed to produce each book of occupational descriptions. The CIS expects to produce new books of descriptions three or four times a year. The yearly rental for the occupational needle-sort system is currently set at $35. The policy of renting this delivery device was formulated to insure the updating of cards and exchange of the occupational descriptions.

Career information fee summary. In summary, the fee schedules described above provide full user support of materials and delivery media, but as yet only part of the crucial information development, consultation, in-service training, and research and development costs.

Fees for Program Planning Information Services

At present there is no fee schedule for Manpower Information Clearinghouse services. As has been noted previously the emphasis to date with regard to program planning information has been on the design and testing of methods and formats that are economical yet functional for program planners. This emphasis has produced a substantial service to the pilot area, and in fact that service has been largely paid for by the area in the form of an Emergency Employment Act position established by the Lane Council of Governments. This has been a highly satisfactory financial arrangement during this interim period, inducing very substantial cooperation between CIS staff, the Council of Government's manpower planner, and local manpower agencies, but it cannot be relied upon as a source of funding in the long run, both because the Emergency Employment Act is currently being phased out and because it was never intended to underwrite new positions on a permanent basis. The CIS staff as well as the principal users of the Manpower Information Clearinghouse have been reviewing the financial status of the Clearinghouse, and the CIS Board will be examining financing options in the near future.

FINANCIAL SUPPORT FROM USER AGENCIES

CIS has experienced what can only be described as a truly remarkable increase in service. Taking over from a small experimental project, CIS developed a clientele with 15,000 persons during fiscal year 1972 and increased that number to 30,000 in fiscal year 1973. Current commitments and plans by user agencies which can reasonably be described as "firm," provide for 100,000 for fiscal year 1974. Mostly these figures represent people who would not otherwise have received comprehensive career information. These figures seem more impressive when one realizes that there are only about 160,000 students in grades 9-12 in the state, and they seem all the more substantial when one realizes that population serving agencies are not only adopting and using the service, but also supporting it financially. The numbers of users and revenues produced by the current fee schedule are shown in the following table. In examining these figures it should be remembered that they primarily represent secondary school and community college populations (for details see Chapter V). The extensive work with social agencies which will be a part of Phase III could well result in substantial increases in the figures for 1974 and beyond. Certainly other school systems will also join the System during the next year, further augmenting the totals.

TABLE X

GROWTH OF CIS USAGE

YEAR	NUMBER OF USERS	REVENUE FROM USER FEES		
		CIS* SERVICES	DELIVERY COMPONENTS**	TOTAL
FY 1971	1,000 experimental	-0-	-0-	-0-
FY 1972	15,000	$ 8,000	$12,000	$ 20,000
FY 1973	30,000	15,000	42,000	57,000
FY 1974***	100,000	45,000	90,000	135,000

* Information development, materials, in-service training
** Primarily costs of computer services
*** Includes commitments and firm plans by user agencies, as of March, 1973

Prospects for Complete Users Support

There are a number of reasons to be encouraged about the prospects for support of this System by population serving institutions. The growth described above is certainly one reason. It is especially encouraging that this growth is occurring under a fee schedule which has population serving institutions covering many of the major costs of the System, and it is encouraging that the System is ahead of schedule on acquiring support from users, even though the time available to work with local school districts was shorter by one budget cycle than originally planned.

Moreover, there is substantial opportunity for further expansion. The commitments and firm plans for 1974 currently cover about two-thirds of the high school age students and about one-fifth of the community college students of the state. The four-year colleges and universities and the social agencies are as yet participating in only very minor ways in CIS, and most of those students and clients are also in serious need of career information. The reasons for their non-participation at this time is at least partially because they have simply not had an opportunity to examine the possibilities.

There are other reasons besides recent growth trends and substantial additional areas of need to be optimistic about CIS. The operation is only just now beginning to enter cost-saving stages, where efficiency is accruing to skill and experience and where economy of scale can begin to have a serious impact on costs. Though growth will require staff expansion (there is certainly no excess capacity now), the output per man can reasonably be expected to rise as the System expands.

Despite these very encouraging signs, self-sufficiency is by no means assured at this point. The growth rate that has been recorded in public schools cannot be repeated in that industry, because the school districts in the largest areas of the state (the Portland and Eugene SMSA's) have already joined the System and are participating at nearly maximum levels. Reaching the other one-third of the state's high school student will be a slower process because they are scattered over a geographic area roughly the size of New England; most are served by very small schools, and most of those schools do not have access to computer services.

The prospects for involving various major social agencies in the System are at this point largely unknown. Certainly there are large numbers of people served by those agencies who need such information and certainly the participation of those agencies is very important to the success of the System. But there is reason to believe

that some, at least, may need specialized information or yet undeveloped delivery strategies which will add to the costs of serving those particular populations. These problems are compounded by the fact that administrators of social service institutions are currently in a quandary regarding the whole future structure and financing of social services. Much time and imagination will be required to involve those potential user agencies and institutions in the CIS effort. This fact, plus the loss of one public school budgeting cycle, make the prospect for complete financial self-sufficiency within the next year seem quite improbable at this time.

There are other factors on the cost side which also suggest that the original financial projections may have been conservative. Some activities, such as maintaining the flow of information from data-producing institutions and producing large quantities of material, require more staff effort and, therefore, more financial resources than was appreciated at the time the original proposal was drafted. Moreover, it can be expected that suggestions for changes arising from users will increase, and responsiveness to those changes will require a continuing research and development effort. Modest budget increases will be required to retain the desired quality of service.

Financial Alternatives for CIS

It is entirely too early to say with certainty that complete user support is out of the question, but there are other alternatives that should be examined during Phase III, whether out of necessity or desire. One of those possibilities is partial state funding either through separate state appropriation or as a line item in the budget of one or more state agencies. Another form of state support is for certain state agencies to provide staff support to CIS, for example, by the Employment Division carrying a substantial share of the responsibility for the development of local area data or the state Department of Education providing more of the consultation and in-service training which is required for the CIS to be effective.

There are other alternatives as well. One is to raise user fees to some extent, of course. It is not at all clear at this point what the price elasticity of demand for such services is. Another possibility is to establish the CIS as a regional rather than just a state operation and thus spread some of the fixed costs over still larger numbers of users. Inquiries from out of state, particularly from other areas of the Northwest, suggest that this might be a feasible alternative, though it has not as yet been examined in any detail.

APPENDIX A

CONSTITUTION

ARTICLE I

NAME

The name of this consortium shall be CAREER INFORMATION SYSTEM.

ARTICLE II

GOALS AND OBJECTIVES

The goals and objectives of this consortium shall be to foster development and use of career information, to provide practical means of direct access to current career and labor market information in forms which are meaningful to individual students and clients, and to promote integration of such information into schools and social agencies in this state of Oregon.

The consortium is founded and shall exist as a non-profit organization.

ARTICLE III

CONSORTIUM MEMBERSHIP

Section 1. Membership in the consortium of any individual, agency or institution shall be by formal invitation of the Career Information System Board.

Section 2. Membership may be extended to representatives from secondary and higher educational institutions, social service agencies, Career Information System user agencies, and any other person, agency, or institution designated by the consortium's Board.

Section 3. Membership may be rescinded by two-thirds vote of the Career Information System Board.

ARTICLE IV

CAREER INFORMATION SYSTEM BOARD

Section 1. Nomination. Candidates for the Career Information System Board shall be nominated by representatives of general membership at the first regular September meeting.

Section 2. Election. Members of the Career Information System Board shall be elected in secret ballot by a majority vote of the Board membership at the first regular September meeting. The voting power of each Board member is equal to the number of positions to be filled. Newly elected officers shall take office at the next regular meeting following their election.

Section 3. Composition. The Career Information System Board shall consist of no fewer than seven members, with representation from career counseling, career education, manpower research, school and social agency staff training institutions, major state social agencies, career information user agencies, and individuals with special interest or expertise as determined by the Board. Initially, the Career Information System Board will consist of ten members, who are: Leslie L. Adkins of the Oregon Board of Education, John S. Clyde of Churchill High School, Susan K. Gilmore of the University of Oregon, Casmer F. Heilman of Oregon State University, Kenneth D. Hills of Lane Community College, Paul E. Kerr of the Oregon Employment Division, Burl I. Lundy of the Oregon Employment Division, William D. Manley of the Lane Intermediate Education District, Bruce McKinlay of the University of Oregon, Thomas A. Williams of the Oregon Board of Education, and Franklin Zeran of Oregon State University. Board membership may be expanded upon action of the incumbent members.

Section 4. Authority. The Career Information System Board shall have complete authority to establish, modify, or rescind policies of the Career Information System.

Section 5. Tenure. The term of office for a Board member shall be three years with no Board member eligible to serve more than six consecutive years. The terms of the members of the Career Information System Board shall be staggered. Initially and as determined by chance, three of the members will serve one year terms, three will serve two year terms, and four will serve three year terms.

Section 6. Resignation. Members of the Board may resign by giving written notice to the Board chairman.

Resignation of a Board member shall result upon his failure to attend three consecutive regular meetings or two-thirds of all meetings during a twelve month period. A person is to be notified in writing by the Board chairman one meeting prior to such termination.

The Board may approve extended leaves of absence. Such planned leaves, when approved in advance, will not constitute resignation.

Section 7. Removal. A member of the Career Information System Board may be removed by two-thirds vote of the Board membership.

ARTICLE V

BOARD OFFICERS

Section 1. Positions. A chairman and a vice-chairman shall be nominated and elected by the Career Information System Board at the first meeting in October.

Section 2. Nominations. Nomination for Board Officers shall be by nominating ballot. If one member receives two-thirds of the nominating votes for a Board office, he is elected. If no member receives two-thirds or more of the nominating votes, the two members receiving the highest number of votes shall be so nominated. Ties will be broken by chance. Nominations shall be accepted from the floor.

Section 3. Election. Election to the office will be determined in a secret ballot by a majority vote of the Career Information System Board members present.

Section 4. Term of Office. The term of office shall be one year with no member serving more than two consecutive terms in each office. Vacancies in either position are to be filled by Board action.

Section 5. Duties. The Chairman of the Board shall preside over Board meetings. With the director he shall be authorized to execute legal documents on behalf of the Board. In his absence, the vice-chairman shall assume his duties.

Section 6. Removal. Board members may be removed from the office of chairman or vice-chairman by a two-thirds vote of the Career Information System Board.

ARTICLE VI

DIRECTOR

Section 1. Duties. The Director shall be the administrative head of the Career Information System. He shall be appointed for an indefinite term and may be removed by a majority roll call vote of the full Career Information System Board.

Section 2. Board Membership. The Director shall serve as an ex officio, non-voting member of the Career Information System Board. He shall keep the Career Information System Board advised at all times of the affairs and needs of the Career Information System.

Section 3. Personnel. The Director shall appoint or remove appointive personnel from positions within the Career Information System.

Section 4. Purchasing. The Director shall act as purchasing agent for the Career Information System.

Section 5. Reporting. He shall be responsible for preparing and submitting annual budget estimates and such reports as the Career Information System Board requests.

ARTICLE VII

COMMITTEES

The chairman of the Career Information System Board and/or the Career Information System Board may establish committees deemed appropriate. Members appointed to committees need not hold regular membership and may be personnel from user agencies of the Career Information System.

ARTICLE VIII

MEETINGS

Section 1. Regular Meetings. Regular monthly meetings will be held at a time and place agreed upon by the Career Information System Board.

Section 2. Special Meetings. Special meetings may be called by the chairman or three members of the Career Information System Board.

Section 3. Quorum. A majority of the Career Information System Board will constitute a quorum.

Section 4. Agenda Items. The Board chairman, in cooperation with the Director, shall prepare an agenda. Any Board member may place an item on the agenda by notifying the chairman. Unless five days prior notice has been given of the pending consideration of an agenda item, any member of the Career Information System Board may cause that item to be held over to the next regular meeting.

Section 5. Open Meetings. All regular and special meetings of the Career Information System Board shall be open to the public, except that the chairman, at his discretion, may close the meeting for the consideration of personnel matters.

Section 6. Parliamentary Authority. Robert's Rules of Order will be the rules for the conduct of Board meetings, in so far as they do not conflict with this constitution.

ARTICLE IX

AMENDMENTS

This constitution may be amended by two-thirds vote of the Board membership.

ARTICLE X

DISSOLUTION

This consortium may be dissolved by two-thirds roll-call vote of the full Board membership provided ten days written notice of intent has been given all members. If reasonable attempts to obtain attendance for voting on dissolution have failed, the chairman may conduct such a vote by mail.

Agreed to and Adopted
January 10, 1972

APPENDIX B

STANDARDS FOR USE OF THE OCCUPATIONAL INFORMATION ACCESS SYSTEM

The Career Information System (CIS) has the responsibility for providing practical means of direct access to current career and labor market information in forms which are meaningful to individual students and clients and for encouraging integration of such information into schools and social agencies in the State. One of the methods available through the CIS is the Occupational Information Access System.

The Occupational Information Access System (OIAS) is a good tool, but, like most tools it is designed to do a particular kind of job, and it works best when it is used for that purpose. This set of "Standards" is intended to help user schools and agencies understand the System and to plan uses that will complement their other activities.

The purpose of OIAS, as the name implies, is to make occupational labor market information more accessible for career exploration. To achieve this end, the System:

- -helps the user identify relevant occupations to explore.
- -helps the user find publications which will give him facts about occupations he wants to know more about.
- -presents taped interviews and personal visits as well as printed material to meet the different needs of different users.
- -can be operated by inexperienced students and other individuals. It does not require staff assistance, though parts of the System fit easily into counseling and instructional situations.
- -covers all of the major occupations in the area as well as significant ones not found locally.
- -can be updated immediately as new or revised information becomes available.

The System consists of several semi-independent components, so it has a certain built-in flexibility to adapt to different user needs and different institutional resources. The basic components are:

QUEST Program: Helps users identify occupations to explore and helps them locate appropriate types of information about occupations. (Computer and manual versions available).

DESCRIPTION: Brief, 250-word summaries about each of the occupations in the System (teletype and pre-printed cards available).

BIBLIOGRAPHY and BOOKS: Refer users to the most pertinent general and specific publications about particular occupations.

CASSETTES: Taped interviews with people in various occupations give a "feel" for what the work is like. Especially useful for people who do not read well or for classroom discussions.

VISITS: Give more intimate exposure to the occupation. Arrangements are made for people in occupations to talk about their jobs and to show others the work place.

The System has been tested in seven locations: University of Oregon Counseling Center, Churchill High School, five Employment Division offices, Lane Community College, Vocational Rehabilitation Division Office in Eugene, and Shasta Junior High School.

Among other things, these tests indicated certain rules for effective use of the System. (Copies of the individual evaluation reports are available on request).

Rules for System Use

1. The following table indicates four ways in which System components can be used to meet particular needs. Prospective user institutions should analyze their needs to determine which purposes they want the System to serve.

USES OF OIAS COMPONENTS

TYPE OF USE	Principal Component	Other Required Components	Optional Additional Components
1)Identification of Occupations for Exploration	QUEST	DESCRIPTION, BIBLIOGRAPHY and BOOKS	CASSETTES, VISITS
2)Introduction to Occupations	DESCRIP-TIONS	BIBLIOGRAPHY and BOOKS	CASSETTES, VISITS

USES OF OIAS COMPONENTS (continued)

TYPE OF USE	Principal Component	Other Required Components	Optional Additional Components
3)Poor Readers' Introduction to Occupations	CASSETTES		VISITS, DESCRIPTIONS
4)Counselors' Reference to Selected Occupational materials	BIBLIOGRAPHY and BOOKS		DESCRIPTIONS

The requirements listed in the preceding table are based on experience which has shown, for instance, that the QUEST questionnaire and list of occupational titles should not be used by itself. The questionnaire contains several pertinent occupation selection criteria, but other information, for instance job opportunities and licensing requirements, is essential to a sound occupational choice. Users should have access to and be encouraged to use some additional material--descriptions, books, cassettes, visits, etc.--to get information about the occupations they want to explore. Any institution using the QUEST part of the System must plan to utilize at least the DESCRIPTIONS, BIBLIOGRAPHY, and BOOKS.

2. Institutions should incorporate the System into on-going courses and counseling practice, wherever appropriate and feasible.

It is advantageous, though not required, that they also make the System available for independent student/client use. Experience has proved that the System receives effective use when it is open to independent client/student usage, but its resources should also be integrated into on-going instructional and counseling programs.

3. Batch processing of the QUEST questionnaire, whereby students receive only a printout of their QUEST list without an opportunity to make changes, inquire why not, and immediately retrieve descriptive information about the occupations, has not been tested and is not authorized.

4. Current local, regional, and national occupational labor market information is at the heart of the System. Providing inaccurate or outdated information is a serious misuse of the System and a disservice to students. User schools and agencies must support an adequate program of information maintenance and updating. The CIS will assist in planning and operating such an information maintenance program.

5. In-service training of staff is a prerequisite to use of the System. Effective use of the System requires an understanding of: System components, sources and use of information, mechanics of System use, discussion of System applications within the particular setting. Staff who will use or be responsible for the use of the System in individual schools and agency offices must attend a training program which has been approved by the CIS.

6. Each user institution should designate one person as the liaison person for the institution. This will provide a contact point for communication between the institution and the CIS staff.

7. Institutions must bear their own operating costs. Development of the System was financed by the U. S. Department of Labor, Manpower Administration, so user agencies are not charged for any of the initial developmental costs. However, the Labor Department is not underwriting localized operation of the System beyond certain minimum testing, so operating costs must be borne by user institutions. These costs will include:

For a Computerized System:	For a Needle-Sort System:
Ia. terminal costs installation telephone connection operating costs (teletype equipment rental, computer use charge)	Ib. needle-sort card file
II. appropriate printed materials (introductions, questionnaires, bibliography and books, etc.)	II. appropriate printed materials (introductions, questionnaires, bibliography and books, etc.)
III. initial information development (if required)	III. initial information development (if required)
IV. share of updating costs (continuous information maintenance and system modifications)	IV. share of updating costs (continuous information maintenance and system modifications)

For a Computerized System:

V. agency staff training and program evaluation

VI. for recorded occupational interviews (if used)
cassette player, cassette tapes

For a Needle-Sort System:

V. agency staff training and program evaluation

VI. for recorded occupational interviews (if used)
cassette player, cassette tapes

8. OIAS materials are copyrighted and remain the property of the OIAS Project. They are not to be duplicated by user agencies without the written approval of the CIS Director.

9. User agencies employing OTIS terminals for access to OIAS will need to make plans for compatible scheduling. They must also authorize in writing to OTIS Director Robert Dusenberry this additional usage of their terminal and must state their acceptance of responsibility for computer use charges and for security of school files. (Computer "time-lock" security procedures and other security measures are available and will be discussed with users.)

10. The OIAS System is still being tested and modified, and new applications may be tested. Experimentation is encouraged, provided it is conducted with evaluation and with approval by CIS staff. However, the above requirements have proven to be essential, and any institution using the OIAS System must observe these requirements unless other arrangements are made in advance. Unauthorized departure from these standards will be viewed as a breach of the agreement and will result in termination of System availability.

Revised 11/71
Adopted 11/15/71
CAREER INFORMATION SYSTEM

Office of the Director
247 Hendricks Hall
University of Oregon
Eugene, Oregon 97403
(503) 686-3872

APPENDIX C

Career Information System

Agreement Between the
Coos County Intermediate Education District
and the Career Information System
1972-73

The following agreement represents considerable commitment by both parties to promote and service an occupation information system in Coos County for the 1972-73 school year. This agreement also implies an effective working relationship between both parties to communicate on important developments in the system.

CAREER INFORMATION SYSTEM RESPONSIBILITY:

Program and File Format

The CIS will make available the following files and programs for the use of approximately 2,000 Coos County students in schools designated by the Coos County IED:

Occupational Interview Cassettes (Cassettes);

Descriptions (DESC) file updated, and localized to Coos County as it becomes available;

Bibliography (BIBL) file updated for use during 1972-73;

Education and Training Opportunity (EDUC) file as it becomes available;

QUEST program (computerized and needle-sort).

Materials

The CIS will deliver the following materials for use by 2,000 students and supportive staff.

(a) Bibliography and Books--one set for each school designated to use the System

(b) User's Handbooks--2,000

Set of Occupational Interview Cassettes

The CIS will deliver one set of cassettes which the Coos County IED can reproduce for each user school.

Information Development and Maintenance

The CIS will develop localized occupation files for Coos County and maintain these files by systematically reviewing and updating each description biannually. The CIS will develop the file into a form applicable to Coos County by November 1, 1972. The CIS will continue to develop and localize the file over the updating cycle.

Evaluation

CIS will assist Coos County IED with an evaluation of the System's effectiveness for Coos County students.

Manual System

The CIS recognized Coos County IED's requirements for an alternative to the teletype terminal as a delivery medium. To meet this requirement, the CIS has developed the occupational needle-sort system. The CIS will furnish fifteen occupational needle-sort systems to Coos County under the terms of this agreement.

In-Service Training

(a) The CIS will cooperatively plan a group in-service training session with Ronald Olsen, Career Education Coordinator from Coos County. This

session should include a school administrator, school coordinator/counselor, secretary and any other interested personnel from designated schools. This group training will precede activation of the System in Coos County.

(b) The CIS will be available as a resource for follow-up at each school using the System upon the request by Ronald Olsen.

COOS COUNTY IED RESPONSIBILITY:

1. The Coos County IED estimates that approximately 2,000 students will be served by the CIS information files and programs during the 1972-73 school year.

2. The Coos County IED agrees to commit $2,000 to the CIS by December 1, 1972, for information development, information maintenance and materials for approximately 2,000 Coos County students to be served during the 1972-73 school year. The Coos County IED agrees to pay CIS $1 each for the next 1,200 students and $.30 for each student thereafter. This is consistent with the pricing policy which has been established by the CIS Board of Directors.

3. CIS files and programs are for the sole use of students, teachers, and counselors in designated Coos County junior and senior high schools in the Coos County Intermediate Educational District during the school year 1972-73, and any subsequent school year during which an agreement is effective. A designated junior or senior high school is a school in Coos County whose staff has had a CIS approved group in-service training session and has materials and access to the System.

4. Coos County IED agrees that no charges shall be made to individual students, faculty, or counselors for the use of the System.

5. During the 1972-73, the Coos County IED will make an evaluation of the Manual System (see CIS Responsibility #5). The CIS will assist in the process.

6. Standards for use: The "Standards for Use...," Appendix A, as adopted by the CIS Board will be the basis of operation in the designated schools except as modified below:

a. VISIT file (Standards, p. 2): A VISIT file is not available from the CIS for Coos County IED. Instead, counselors can be instructed to arrange occupational visits for students. Separate arrangements may be made with the CIS for assistance in developing a VISIT file localized to Coos County.

b. Information Maintenance (Standards, items 4, p. 4): The CIS is responsible for the development and maintenance of current local, regional, and national labor market information.

c. (In-service training (item 5, p. 4):

(1) The Coos County IED will arrange to have a school administrator, school coordinator/counselor and secretary from each designated school to attend a group training session given by the CIS staff. This in-service session will be planned cooperatively with Ronald Olsen, Career Education Coordinator.

(2) This group session must precede the use of the System in the designated school.

(3) Ronald Olsen, with CIS staff assistance, will conduct a follow-up session with each designated school to ensure their understanding and effective use of the System. These sessions will be conducted within approximately six weeks of the group session.

d. Liaison persons (Standards, item 6, p. 4): Each Coos County school will designate a school coordinator for contact with Ronald Olsen.

7. Coos County will place in each user school all materials for use with the System.

Violation of the above terms and conditions shall constitute a breach of the agreement. Upon such breach of agreement and after a thorough review of the breach by both parties, either party may terminate this agreement upon 10 days written notice to the other.

This agreement expires June 30, 1973.

Upon expiration of this agreement or upon termination for breach of the agreement, Coos County agrees to return to the Career Information System any unused copies of the user materials, information files, cassette tapes, and other materials obtained or developed for the purpose of implementing the occupational information system.

FOR COOS COUNTY IED

(Name) (Title)

(Date)

FOR CAREER INFORMATION SYSTEM

Bruce McKinlay, Director

(Date)

Ratified by the CIS Board

William Manley, Chairman

(Date)

APPENDIX D

Outline of A Cooperative Agreement for Development of Occupational Information Between Employment Division and Career Information System

OBJECTIVE

Make local, state, and national occupational information available to clients of the Employment Division and other social agencies and schools in Oregon.

RATIONALE

A large number of persons are in need of occupational information in order to make career plans.

No single agency possesses the resources to develop and maintain occupation information for all areas of Oregon.

CAREER INFORMATION SYSTEM WILL CONTRIBUTE:

1. Occupational Information Storage System--necessary components of the occupational information system such as the occupational lists , the computer storage capacity, occupational description format, and other system components as agreed upon.

2. Common Information Development--professional and secretarial resources necessary to develop and maintain at a satisfactory level of quality common information

3. Assistance with Localized Information--assistance to Manpower Economists in the development of area specific information for all occupations for all areas of Oregon. In so doing, CIS will provide each Manpower Economist with methodology jointly developed by CIS and ES.

   a. a copy of the common information for each occupation along with the area specific reference file

   b. names of experts and references to data for use in developing and maintaining area specific information

   c. research guides and writing guides for use in developing and writing the area specific information.

d. an "Occupational Information Description Source Record" for each occupation which the manpower economists can use to record the names, titles, etc. of their information sources.

e. CIS will receive the reviewed and edited reference file sections from the manpower economists and take final responsibility for compiling and storing the area specific information.

4. Use by Local Offices--CIS will provide copies of descriptions, including common and area specific information for all occupations, for distribution to each local office.

5. Use by Other Agencies and Schools--arrangements for use of the occupational information in other agencies and schools will be made through CIS. This will remain the responsibility of CIS.

EMPLOYMENT DIVISION WILL CONTRIBUTE:

1. Manpower Economists--resources of the area Manpower Economists to enable them to review, validate, edit, and develop area specific information for each of the occupations. Manpower Economists will also read common sections of the occupational descriptions and notify CIS when they deem a change is required.

2. Research and Statistics and Occupational Analysis Data--information developed by the research and statistics section, the occupational analysis section and other sections of the Employment Division to be used in development of the common and area specific information.

3. Local Office Space--adequate space in each local office for delivery of the occupational information to staff and clients.

4. Additional Materials--resources to support other media or information files if additional materials distributed through CIS are utilized.

METHODOLOGY

Methodology will follow that outlined above. Details will be jointly determined by the Chief of the Research and Statistics Section of the Employment Division and the Director of the Career Information System.

APPENDIX E

Names of Major Organizations and Agencies Producing Occupational Data

Career Information System personnel have established liaisons with a large number and variety of manpower data-producing as well as data-using agencies. Some of these include:

a. Personnel departments of several Oregon cities and counties;

b. Oregon councils of government (such as Lane Council of Governments and the Columbia Regional Association of Governments);

c. Career education departments of Oregon intermediate education districts (IED's);

d. Career education directors and coordinators, counselors, program planners and other administrators of many Oregon local school districts and community colleges;

e. The Career Education, Student Services, and General Education Divisions and the (education information) Retrieval-Dissemination Center of the Oregon Board of Education;

f. Staff members of the Oregon Educational Coordinating Council;

g. The Oregon Education Association;

h. Local manpower economists, personnel of the Research and Statistics, Occupational Analysis and Testing, and Data Systems Sections of the Employment Division, Oregon Department of Human Resources (ODHR);

i. Apprenticeship and Training Division, Oregon Bureau of Labor;

j. The Divisions of Institutional Research and Continuing Education, the Office of High School Relations, and various registrars, deans, and department heads of institutions of the Oregon State System of Higher Education;

k. The Oregon Economic Development Division;

l. The Federal Cooperative Extension Service, Oregon State University;

m. The Program for the Aging, Economic Opportunity Office, and the Governor's Manpower Planning Council of ODHR;

n. Personnel Division of the Oregon Executive Department;

o. The Center for Population and Research and Census, Portland State University;

p. The Public Welfare and Vocational Rehabilitation Divisions of ODHR;

q. The Bureau of Governmental Research and Services, Bureau of Business and Economic Research, and Institute of Industrial and Labor Relations of the University of Oregon;

r. The Division of Labor Statistics and Occupational Outlook, Office of Wages and Industrial Relations, Division of Occupational Wage Structures, Division of Employment and Unemployment Analysis, and others of the Bureau of Labor Statistics, U. S. Department of Labor;

s. The U. S. Employment Service, Manpower Administration, U. S. Department of Labor;

t. The Office of Federal Contract Compliance and Women's Bureau, Employment Standards Administration, U. S. Department of Labor;

u. The National Science Foundation;

v. The U. S. Office of Education's Division of Vocational and Technical Education and National Center for Educational Statistics;

w. The Federal Reserve Bank of San Francisco;

x. Licensing Boards;

y. Professional Associations, Trade Associations and Unions;

z. Rural Health Career and Counseling Service

APPENDIX F

Revised Classification System For CIS/MIC Library

I - GENERAL

I-A	General Occupational Information, n.e.c.
I-A-1	Occupational and Industrial Definitions and Classifications
I-A-2	Occupational Safety and Health, Workmen's Compensation
I-A-3	Legislation and Regulations, n.e.c. (interpretations, effects, proposed policy, etc.)
I-A-4	Wage Rates and Supplements (incl. fringe benefits, pension plans, etc.)
I-A-5	Price Data and Indexes
I-B	Labor Market Research Methodology
I-C	Demographic Data
I-D	General Economic Data, n.e.c. (incl. miscellaneous local, state and regional data)
I-E	Personnel Management (methods, position classifications, problems, etc.)
I-F	Job Search (techniques and related information)
I-G	Periodic Agency Reports
I-J	Bibliographies (data source lists, publication advertisements, etc.)
I-K	Miscellaneous Directories, n.e.c.

II - MANPOWER SUPPLY

II-A	Manpower Supply Sources - Institutional (general labor supply studies)
II-A-1.1	School Directories
II-A-1.2	Catalogs for 4-Year Colleges and Universities (public and private)
II-A-1.3	Catalogs for 2-Year Public Colleges
II-A-1.4	Catalogs for Proprietary Schools
II-A-1.5	School Data, n.e.c. (enrollments, completions, drop-outs, etc.)
II-A-1.6	Career Education Policies and Methods (some sources on DK's or JC's shelves in Room 247A Hendricks Hall)
II-A-2	On-The-Job Training (incl. apprenticeship programs)
II-A-3	Occupational Transfers (flow between occupations, occupations most affected)
II-A-4	Geographic Migrants (into and out of various areas by occupation and/or by industry)
II-A-5	Unemployment (statistics, trends, analyses, UI claims, etc.)
II-B	Manpower Supply Sources - Special Labor Force Groups (characteristics, specialized manpower programs, etc.)
II-B-1	Youth (persons under 21 years of age)

II-B-2 Older Workers (persons over 45 years of age)

II-B-3 Women

II-B-4 Handicapped (physically, mentally or emotionally)

II-B-5 Indians (Amerinds or Native Americans)

II-B-6 Negroes

II-B-7 Spanish Surname, Persons with

II-B-8 Asians (persons of Asiatic descent)

II-B-9 Poor (persons with incomes near or below poverty level)

II-B-10 Veterans (ex-military)

III - MANPOWER DEMAND
(Current and Future Size, Other Characteristics)

III-A Occupational Information (data on individual occupations and occupational groups)

(III-A-11 thru III-A-98 are filed in Occupational Materials File in top drawer of 4-drawer file in Room 247B Hendricks Hall)

III-A-11 Administrative Occupations

III-A-14 Clerical Occupations

III-A-16 Bookkeeping Occupations

III-A-21 Social Research and Planning Occupations

III-A-23 Engineering and Design Occupations

III-A-26 Laboratory Occupations

III-A-31 Mechanics Occupations

III-A-34 Building Maintenance Occupations

III-A-41 Agricultural and Forestry Occupations

III-A-42 Construction Occupations

III-A-43 Food Products Occupations

III-A-44 Textile and Apparel Occupations

III-A-45 Timber Products Occupations

III-A-47 Graphic Arts Occupations

III-A-54 Metal Working Occupations

III-A-56 Electricity and Electronics Occupations

III-A-59 Other Production Occupations

III-A-61 Transportation Occupations

III-A-71 Stock Control Occupations

III-A-74 Sales Occupations

III-A-78 Food Service Occupations

III-A-81 Health Service Occupations

III-A-84 Social Service Occupations

III-A-94 Protective Service Occupations

III-A-98 Art and Entertainment Occupations

III-B Geographic Area Studies (demand for and supply of manpower within defined geographical areas; may be broken down by occupation, occupational group or by industry)

III-B-1 Oregon (statewide or local areas within the state)

III-B-2 Other States or Regions

III-B-3 United States (the nation as a whole)

III-B-4 Foreign (other nations)

III-C Industry Studies (current and future demand for and supply of manpower for all industries)

III-C-1 Agricultural, Forestry and Fishing Industries (SIC 01-09)

III-C-2 Construction Industries (SIC 15-17)

III-C-3 Lumber and Wood Products Industries (SIC 24)

III-C-4 Other Manufacturing Industries (SIC 20-23, 25-39)

III-C-5 Transportation Industries (SIC 40-47)

III-C-6 Communications Industries (SIC 48)

III-C-7 Utilities Industries (SIC 49)

III-C-8 Wholesale and Retail Trade Industries (SIC 50-59)

III-C-9 Finance, Insurance and Real Estate Industries (SIC 60-67)

III-C-10 Service Industries (SIC 70-89)

III-C-11 Public Administration (SIC 91-97)

REVIEW DRAFT
Not a final publication

APPENDIX G

HANDBOOK FOR DEVELOPING TAPED OCCUPATIONAL INTERVIEWS

BY

Michael J. Shadbolt
Career Information System
University of Oregon
Eugene, Oregon 97403

WHOM TO INTERVIEW

After you have chosen an occupation, you must choose whom to interview. How do you insure that the statements of the interviewee are at least broadly representative of prevailing opinion in the occupation? This is difficult. No foolproof method exists. As long as you use a single spokesman, you can never be sure the interview will be completely representative. Nonetheless, you can do some things to increase its likelihood.

First of all, you can approach the way in which you acquire the names of potential interviewees in a judicious manner. You may contact employers, or employee organizations for names. Alternatively, you may rely on friends, relatives, and acquaintances to suggest names. Or you may want to use a list of names compiled by a civic organization. Another method is to contact a training institution and ask for the name of a recent graduate who is currently employed in a training related occupation. No one method is clearly superior. It will depend upon your objective, the occupation, and your personal resources. However you get a name, it is best to interview someone in the occupation, not a supervisor, or teacher, or someone who is preparing for that occupation. The only people who know what the work is really like are the people who do it every day.

There is one advantage to asking an employer for the name of someone to interview; when you acquire the employer's recommendation of someone to interview, you also receive his tacit approval to proceed with the interview. It should be remembered, however, that the employer, if he has a choice, is likely to recommend a highly satisfied worker. Unless you are producing the interview for promotional purposes, this may not be the best individual for an occupational interview. To prevent this from happening, sometimes you can specify what

kind of person you want. That is, instead of asking that the interviewee not be a "company man," you might ask that he have at least 2 years experience but not more than five, and that he not be the lead man or foreman but a production worker. You can also explain that the objective is to produce a realistic account of the worker's feelings about the occupation and not a highly staged or managed version. In this way, you decrease the chance that you will be paired with the showcase worker.

Employee organizations, training institutions and civic organizations frequently behave in the same way. They have an inclination to portray their occupations in the most favorable light. Again, by carefully explaining your objective and by specifying criteria, you can influence whom you will get.

The recommendations of ~~there~~ others as well as your own friends, relatives and acquaintances can be very good for interview purposes. You may want to ask someone with whom you have done business. However, if the interview is conducted with someone you know, you must be sure to remain objective. More will be said about this later, but the point is that the interviewer must be prepared to question the responses of the interviewee. This may be more or less difficult if a previous acquaintance exists.

Finally, some occupations have less public exposure than others. Neither you nor your friends may know of anyone in a particular occupation. Few young people have contact with aircraft mechanics, physical therapists, and tool die makers. In this event, you may have to rely upon someone else's advice.

Some occupations are largely self-employed. That is, workers do not work for another person. In this event, you may have to contact the person directly without a prior introduction or referral. Often, though, self-employed persons belong to professional organizations through which you can

obtain names. Lawyers belong to the Bar Association, civil engineers belong to the Society for Civil Engineers, and craftsmen belong to the Craftsmen Guild.

QUESTIONS

After establishing the amount of interview time, you must decide what questions to ask. In large part, this will be determined by your media. Some media do some things better than others. The printed media are very good for giving factual information. Audio media don't do this as well, but audio tape can capture human feelings and emotion. As such, it is very amenable to transmitting information on topics of opinion.

Since the OIAS is made up of several different media components, we have assigned to each component the job for which it is best suited. As such, we use the taped interviews to develop information about effective reactions to an occupation such as what is the source of personal satisfaction or dissatisfaction with the job, as well as other non-quantifiable information such as what things have been most helpful before entering an occupation. The questions we use are designed to get these kinds of information.

This really takes us back to the objective. Obviously the questions you ask bea r a close relationship to the project objective. The objective of the taped interviews was only established after joint consideration was given to the nature of the media, available interview time, and information needs.

We ask at least some of the following questions in the OIAS interviews:

1. What is your job like? (A typical day: What do you do? What kind of problems do you deal with? What kinds of decisions do you make?)

2. What are the most important personal satisfactions and dissatisfactions connected with your occupation?

3. What social obligations go along with a job in your occupations? Are there organizations you are expx ected to join, or other things you are expected to do outside of work hours?

4. What things did you do before you entered this occupation? Which have been most helpful?

5. What sorts of changes are occuring in your occupation?

6. How does a person progress in your field? What is the best way to enter this occupation, and what are the advancement opportunities? What are the major qualifications for success in this particular occupation?

Rarely will you want to adhere closely to this list of questions. For example, sometimes we phrase questions differently, often in a more conversational way. We will add a question when the interview seems to call for one. In this way, we keep the interview on a more relaxed, conversational level.

It is a good idea to list the questions that occur to you while thinking about the occupation. Next, pick up two or three readily available sources of information about the occupation, such as the Occupational Outlook Handbook, the OIAS Descriptions, and the Dictionary of Occupational Titles, and study them. On the basis of the reading, some of the questions will be answered while others will not. The unanswered questions, unless they refer to matters of precise factual information, would then be prime material for an occupational interview. For example, in preparation for an interview with a physical therapist, it struck me that persons in that occupation should have the physical strength to lift and carry fairly heavy loads since they often work with patients who are physically immobile, and need assistance. And yet, in reading about the occupation, I discovered two pieces of information that seemed to contradict my intuition. In the Dictionary of Occupational Titles section on physical demands, I learned that physical therapist is classified as an occupation with only light lifting. Furthermore, I learned that a majority of all physical therapists are members of the "weaker" sex. To resolve the confusion, I asked the physical therapist during the interview about the physical demands. He

straightened me out by explaining that physical therapists are taught to utilize the principle of body mechanics which enables them to handle what would otherwise be extraordinary weights in an efficient and easy manner.

In addition, you may want to ask someone you know to suggest a question. The instructions may be "if you could ask a stewardess one question, what would it be?" The suggestions are often excellent, especially if the person has at some time considered the occupation for himself(herself).

You should avoid asking for facts which your interviewee will not know. Do not ask him to tell you how many people work in his occupation, or what the prevailing rate of pay is. There are better sources of those factual data.

Many interviewees like to know what questions they are going to be asked so they will have time to think about them before the interview. You should be prepared to tell them the kinds of questions at the time you arrange for the interview.

APPENDIX II

FORMAT AND INSTRUCTIONS FOR WRITING OCCUPATIONAL DESCRIPTIONS

COMMON INFORMATION

NATURE OF THE JOB

Give a concise statement of the essential function, purpose, or objective of the job. Define the occupation, in terms of its ultimate aim, don't merely describe it. You may include historical background of the occupation.

Describe very briefly, in action terms, the major activities of the job. Note changes that are taking place in job duties. Make clear what occupations are included. Distinguish between this occupation and others. List major specialties.

WORKING CONDITIONS

Describe the environment--physical and organizational--in which the job is typically performed. If possible, describe the types of people contacted in the job, and in what context.

Note unusual work schedules. Note amount of traveling required (nights away from home). Note availability of part-time jobs.

QUALIFICATIONS (In this section, be sure to keep in mind the distinction between what is required and what is desired.)

Native Qualifications: Aptitudes, physical capacities, mental and social requirements, specific physical requirements: climbing, stooping, etc. Note differences among specialties.

Legal Qualifications: Licenses, age, etc.

INSTITUTIONAL SETTING

Location and type of establishment hiring the occupation. Note industry and firm size. Note seasonality or other problems.

INSTITUTIONAL SETTING (Continued)

Preparation: Education, training and experience required for employment.

Relevant, desirable preparation beyond minimum requirements.

Describe promotional ladders. Especially note situations in which continued employment or promotion require frequent moving.

AREA SPECIFIC INFORMATION

Note local exceptions to "common information" statements.

Legal Qualifications:

Training Sources: List sources of training which are significant in the area.

Employee Organizations: If appropriate, note organizations (unions, etc.) affecting working conditions. Most important when membership is mandatory.

Hiring Channels: Report normal hiring channels, if noteworthy.

EMPLOYMENT AND EARNINGS

Current Employment: Indicate extent of local employment. Note significant seasonality fluctuations. Include self-employed as well as wage and salary. It is not imperative to use numbers. Descriptive terms such as small, large are often useful.

Personal Characteristics: Note personal characteristics (age, sex, etc.) of present employees.

Wages and Supplements: Describe wage rates and wage supplements. The most appropriate figure will usually be a median entry rate. Note income potential (median maximum rate) when known and significantly different.

EMPLOYMENT PROSPECTS

Refer to Demand-Supply Worksheet as a guide.

Note factors determining growth--rising personal incomes, legal requirements, etc.--include comments about the industries with greatest prospects.

Describe major supply sources and their trends.

Draw conclusions about the relationship between supply and demand in the past, at present, in the future. State current outlook and describe how it will change. Give reasons for judgment. If appropriate, note differences by specialty. Where possible, note causes of imbalances--lack of training, wages and working conditions, licensing, etc. Keep national trends in mind, and note discrepancies between area and national prospects.

It is often adequate to use descriptive phrases "substantial surplus, etc.", rather than numbers. Note local differences to state and national patterns prepared by CIS.

WRITING STYLE

Writers should keep the following in mind when preparing occupational descriptions.

1. The style should be as clear and straight forward as possible. Although the occupational descriptions serve multiple purposes, they are primarily intended for the use of school counselors, local office counselors, interviewers, students, new entrants into the labor market, and manpower program planners. Jargon, gobbledegook, and cliches should be avoided. A straight forward sentence is preferable to an attempt at cleverness that fails.

2. Always be accurate in what is expressed. Care should be taken with the use of such words as "always," "sometimes," "seldom," "usually," "rarely," etc. All statements must be based on verifiable sources. Statements of opinion should be labeled as such.

3. Omit words which express attitudes unless it is specified whose attitudes are being expressed. Whether or not the occupation is boring or pleasant depends on the individual, not on the occupation. Let the facts speak for themselves, the writer should

WRITING STYLE (Continued)

try not to incorporate his own attitude towards the occupation into his writing.

4. The writer should make every effort not to make the job sound more attractive than the facts indicate, because persons may then be attracted to an occupation for which they are not suited. By the same token, it should not be made to sound so unattractive that qualified and interested workers are driven away. A happy balance is the goal.

The section on writing style was adapted from The Preparation of Occupational Guides in the Coastal Area of California, State of California Department of Employment Coastal Area Research and Statistics (San Francisco, California, March 1964)

DEMAND - SUPPLY WORKSHEET FOR SPECIFIC OCCUPATIONS

(Specialty D.O.T. Code)

(Specialty D.O.T. Code)

(Specialty D.O.T. Code)

(Specialty D.O.T. Code)

(Title) Major Occ. Code

TOTAL DEMAND			
CURRENT DEMAND			
Current Vacancies			
FORECAST DEMAND			
Expansion			
Labor Force Withdrawals			
TOTAL SUPPLY			
CURRENT SUPPLY			
Unemployed:			
Active File			
Other Sources			
FORECAST SUPPLY			
New Entrants:			
Training Program Graduates			
High School and College Graduates and Drop-outs without Specific Occupational Preparation			
Military Returnees			
Labor Force Re-entrants			
Net In-migrants (geographic)			
Net In-transfer (occupational)			

DEMAND-SUPPLY SUMMARY

Demand equals Supply_____ Demand exceeds Supply_____ Supply exceeds Demand_____

Source: 1967 Lane County Labor Skill Survey, Eugene Research Office, Oregon Department of Employment, January 1968.

Revised: CIS 5/72

DEFINITIONS OF OCCUPATIONAL DEMAND AND SUPPLY COMPONENTS

TOTAL DEMAND

Definition: The total number of new people needed in this occupation now and during the forecast period.

Source: Sum of Current and Forecast Demand.

CURRENT DEMAND

Definition: Demand for additional workers in the occupation at a point in time, in this case the time of the survey.

Source: Current vacancies.

FORECAST DEMAND

Definition: The demand for new workers expected to develop during the forecast period.

Source: The sum of expansion and replacement demand.

EXPANSION

Definition: One component of forecast demand; the net demand for new workers resulting from the change in the number of jobs in the occupation. (May be positive or negative.)

Source: Employer survey or industry-occupational matrix data.

REPLACEMENT DEMAND

Definition: The need for new people to fill positions which will be vacated during the forecast period.

LABOR FORCE WITHDRAWALS

Definition: Those persons who withdraw from the labor market. This item includes people who leave the labor market because of such causes as death, retirement, illness, starting school, keeping house, etc. It does not include people who leave this labor market area for employment in another area.

Source: Calculated for age-sex cohorts from national working life tables.

(NOTE: Net OUT-MIGRATION and net OUT-TRANSFERS may create replacement demand. See "Forecast Supply.")

TOTAL SUPPLY

Definition: The total number of new workers available to fill jobs in a given occupation.

Source: The sum of Current and Forecast Supply
For full discussion of possible methodologies, see Forecasting Occupational Supply (Oregon Employment Division, 1969)

CURRENT SUPPLY

UNEMPLOYMENT

Definition: Those persons presently engaged in active search for employment. This item requires knowledge of the occupational qualifications of the currently available labor supply, the unemployed.

Source:

ACTIVE FILE

The principle source of information about the occupational qualifications of the unemployed is the Employment Service active file and/or unemployment insurance claims file.

OTHER SOURCES

In spite of the fact that the active file is nearly as large as the number of unemployed persons in the area, it is generally recognized that not all unemployed persons are registered with the Employment Service and that non-registrants tend to be concentrated in certain occupations. In occupations where this is believed to be a significant phenomenon, information about current supply may be available from other sources such as professional associations, union hiring halls, etc.

FORECAST SUPPLY

Definition: The number of new people who will become available for employment in the occupation during the forecast period.

Source: The sum of new entrants, re-entrants, in-migrants, and in-transfers.

NEW ENTRANTS

Definition: New entrants might technically be defined as persons with no previous work experience. However, for the purposes of this analysis, it is more appropriate to define new entrants as those persons without substantial work experience, or whose previous principal activity has never been employment. Thus, students who may have held casual jobs during their school years would be counted as new entrants.

GRADUATES OF OCCUPATIONAL PREPARATORY PROGRAMS

Definition: The number of people who are expected to complete formal occupational training programs, either institutional or O.J.T., during the forecast period, and who are expected to enter the local labor market.

HIGH SCHOOL AND COLLEGE GRADUATES AND DROP-OUTS WITHOUT SPECIFIC VOCATIONAL PREPARATION

Definition: A very large number of school graduates who will enter the labor market have no specific occupational preparation. Consequently, they cannot be assigned as supply for a specific occupation. Nevertheless, they must be counted as supply for those entry occupations which require no training and which are commonly filled by untrained school graduates.

MILITARY RETURNEES

Definition: Men returning from the armed forces and entering the labor market constitute additions to labor supply.

LABOR FORCE RE-ENTRANTS

Definition: This supply item includes people who are re-joining the labor force after a substantial absence. The principal group are women who re-enter the labor market after raising their families. People who take vocational preparatory training courses prior to re-entry should be classified as "Graduates of Occupational Preparatory Programs" above.

Source: An estimate of this number can be calculated by applying national re-entrant rates for females. Care must be taken in assigning them as supply for specific occupations to allow for skill deterioration and the fact that they will not reflect the current occupational profile of the area, but the occupational profile of female employment in the area some years ago.

IN-MIGRANTS

Definition: A sizeable source of occupational supply may be created by persons moving into a study area from other geographical areas. This component includes all workers who move into the area, regardless of the level or source of their occupational preparation. (Consequently, graduates of schools in other areas are classified as migrants for estimating purposes.)

If it were possible, it would be desirable to develop separate data on the gross in-migration and gross out-migration which is expected to occur over the forecast period. However, no methodology exists which would allow such an analysis. Consequently, migration methodologies measure only the net effect of in- and out-migration. (Note that net out-migration constitutes a labor demand item and should be analyzed as such. The estimating methodology is the same as for net in-migration, however.)

OCCUPATIONAL TRANSFERS

Definition: Persons leaving one occupation for another occupation within the same labor market area constitute out-transfer and in-transfers. It should be noted that the total number of out-transfers occurring in all occupations during a given period (a demand item) equals the total number of in-transfers to all occupations during the same period (a supply item). This informal up-grading and down-grading of skills that occurs as people move from one occupation to another is a highly significant variable, which has traditionally been ignored.

Care must be taken to distinguish occupational transfers, which involve movement from one occupation to another occupation, from mere job changes, which may involve a change of employer and a change of industry but do not involve changes of occupation. The activity that is counted as out-transfers and in-transfers will obviously depend partly upon the occupational detail being used.

Note that this item includes only people who leave a job in another occupation in this area; it does not include migrants who may also be changing occupations. Note that the total number of in-transfers in all occupations equals the total number of out-transfers.

Source: Since out-transfers cannot be measured separately from in-transfers, it is necessary to estimate the net effect of movements into and out of an occupation. An excess of out-transfers over in-transfers constitutes additional demand, while an excess of in-transfers constitutes a supply item.

Source: 1967 Lane County Labor Skill Survey
Eugene Research Office
Oregon Department of Employment
January 1968

Revised: CIS 5/72

OIAS Occupational Title _____

OIAS Occupational Code _____

DOT Title

DOT Code

Summary

Employment, Total

Female Q# 7

Data 17-19 ____

People 20-24 ____

Things 14-16 ____

Physical Demands

1 (S, L, M, H, V) 1 ____

2 (Climbing)

3 (Stooping)

4 (Reaching)

5 (Hearing) 3 ____

6 (Seeing) 2 ____

Working Cond's.

1 (I, O, B) 6 ____

2 (Cold)

3 (Heat)

4 (Wet)

5 (Noise)

6 (Hazards)

7 (Fumes)

Trng.

GED 8 ____

SVP 8 ____

WT Groups p.#

Aptitudes

G 13 ____

V 11 ____

N 12 ____

S

P

Q 10 ____

K

F 9 ____

M

E

C

Interests

Temperments

CIS

Occupational Information Description Source Record

Occ. Title:_____ Occ. Code:_____

COMMON SECTION

NATURE OF THE JOB

Function:_____

_____

Job Duties:_____

_____

Occupational Specialities:_____

_____

WORKING CONDITIONS

Environment:_____

_____

Work Schedule:_____

_____

QUALIFICATIONS

Native Qualifications:_____

_____

Legal Qualifications:_____

_____

INSTITUTIONAL SETTING

Education, Training, Experience:_____

_____

Employers:_____

_____

Promotional Ladder:_____

_____

Occupational Information Description Source Record

Occ. Title:_____ Occ. Code:_____

AREA SPECIFIC SECTION

INSTITUTIONAL SETTING

Legal Qualifications:_____

_____

Training Sources:_____

_____

Employee Organizations:_____

_____

Hiring Channels:_____

_____

EMPLOYMENT AND EARNINGS

Current Employment:_____

_____

Personal Characteristics:_____

_____

Wages and Supplements:_____

_____

EMPLOYMENT PROSPECTS

Demand:_____

_____

Supply:_____

_____

Supply/Demand:_____

_____

_____

_____

_____

_____

_____

_____

ID-1
DATA
CIS-5/72

NOTE:

1. The data are
   a. current to:_____(date)
   b. to be updated_____(date)
2. The data cover
   a. these occupations:_____
   _____
   b. all areas of the state? Yes___ No___. What areas?_____
   _____
3. The data was compiled
   a. using what methods?_____
   _____
   b. for what reason?_____
   _____
   c. by whom?_____
   _____

ID-2
Register
CIS-5/72

NOTE:

1. The Register is
   a. current to:_____(date)
   b. to be updated:_____(date)
2. The Register includes
   a. practitioners of these occupations:_____
   _____
   b. all persons licensed and/or registered and practicing? Yes___ No___
   c. persons licensed and/or registered but not practicing? Yes___ No___
   d. non-residents licensed and/or registered? Yes___ No___
   e. cross listing by geographic location? Yes___ No___
   f. additional information (i.e., age, sex, etc.) on registrants? Yes___ No___

ID-3
Prof. Assoc.
CIS-5/72

NOTE:

1. Information is
   a. current to:_____(date)

   b. to be updated:_____(date)

2. Professional association includes
   a. practitioners of these occupations:_____
   _____)

   b. members in all areas of the state? Yes___ No___. What areas?____
   _____

   c. all practitioners of the occupation(s)? Yes___ No___

3. Association publication includes
   a. a listing of names and addresses of all members? Yes___ No___

   b. a cross listing of all members by geographic location? Yes___ No___

   c. personal characteristics (age, sex, etc.) of members? Yes___ No___

ID-4
Lic. Bd.
CIS-5/72

NOTE:

1. Term of office of licensing board members expires:_____
   _____

2. Qualifications (occupation, age, etc.) for positions on the board are:_____
   _____

3. Occupation of licensing board members is indicated? Yes___ No___

ID-5
Info Item
CIS 6/72

Occupational Title: _____

OIAS Code: _____

Source: _____ Information Item: _____

_____ _____

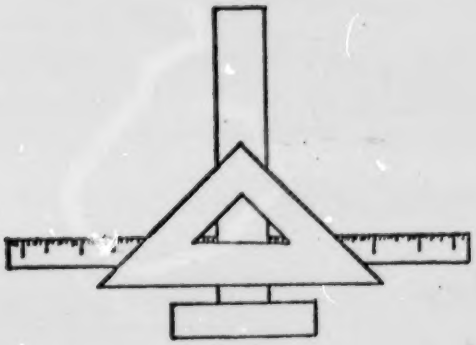
Remarks:

APPENDIX I

Occupational Report

on

DRAFTSMEN



Prepared for

James M. Holst
Career Education Coordinator
Eugene Public Schools

by

Edward G. Watson, Coordinator
Manpower Information Clearinghouse
(A Service of Lane Council of Governments
and Career Information System)

247 Hendricks Hall
University of Oregon
Eugene, Oregon 97403

June 1972

DRAFTSMEN

07/11/72 OCCUPATIONAL SUMMARY

DRAFTSMEN TRANSLATE THE IDEAS AND ROUGH SKETCHES OF ENGINEERS AND ARCHITECTS INTO DETAILED DRAWINGS, WHICH ENABLE OTHER WORKERS TO MANUFACTURE THE PRODUCT OR CONSTRUCT THE BUILDING IN ACCORD WITH THE DESIGNER'S CONCEPT. DRAFTSMEN UTILIZE KNOWLEDGE OF VARIOUS MACHINES, DRAFTING TOOLS, ENGINEERING PRACTICES AND MATHEMATICS TO COMPLETE DRAWINGS. SPECIALTIES INCLUDE ARCHITECTURAL, CIVIL, AND LANDSCAPE DRAFTSMEN, DESIGNERS, AND TRACERS. RELATED OCCUPATIONS: ENGINEERS, ARCHITECTS, ENGINEERING TECHNICIANS.

CURRENT LOCAL EMPLOYMENT: 375, MOSTLY MALES, BETWEEN AGES 22-54; A FEW UNDER AGE 21. EMPLOYERS: ENGINEERING AND ARCHITECTURAL CONSULTING FIRMS, MANUFACTURING FIRMS AND GOVERNMENT AGENCIES. SALARY: STATE CIVIL SERVICE ENTRY RATE FOR ARCHITECTURAL AND CARTOGRAPHIC DRAFTSMEN IS $656 A MONTH.

APTITUDES: ABILITY TO VISUALIZE SPACIAL RELATIONSHIPS OF PLANE AND SOLID OBJECTS; FACILITY WITH MATHEMATICS AND LANGUAGE. SKILLS: UNDERSTANDING OF STRUCTURAL DESIGN, MATERIALS STRENGTH AND PHYSICAL METALLURGY IS HELPFUL. PROMOTIONAL LADDER: TYPICALLY START AS TRACERS; LATER ADVANCE TO POSITIONS AND DETAILERS, JUNIOR DRAFTSMEN, AND INDEPENDENT DESIGNERS. TRAINING: AVAILABLE AT PUBLIC HIGH SCHOOLS, L.C.C. AND U OF O.

CURRENT LOCAL OUTLOOK: FAIR. LONG RANGE OUTLOOK: FAIR TO GOOD. PROSPECTS NATIONALLY ARE EXPECTED FAVORABLE. GRADUATES AND DROPOUTS OF ARCHITECTURE SCHOOLS FILL SOME OPENINGS, ESPECIALLY THOSE OF HIGHER PAY. APPLICANTS WITH LESS TRAINING WILL FIND KEEN COMPETITION LOCALLY.

Source: Career Information System. Occupational Information Access System. Lane County Description File, May 1972.

Occupational Specialties

Draftsmen are often classified according to (1) their level of responsibility, or (2) the type of work they do. Senior draftsmen use the preliminary information provided by engineers and architects to prepare design "layouts." Detailers make drawings of each part shown on the layout, giving dimensions, material, and any other information necessary to make the detailed drawing clear and complete. Checkers carefully examine drawings for errors in computing or in recording dimensions and specifications. Under the supervision of draftsmen, tracers make minor corrections and prepare drawings for reproduction by tracing them on transparent cloth, paper or plastic film. Draftsmen also may specialize in a particular field of work, such as mechanical, electrical, electronic, aeronautical, structural, and architectural drafting. Some other principal occupational specialties include:

Table 1: Draftsman Occupational Specialties

D.O.T.	Job Title	D.O.T. Code	Job Title
001.281-010	Draftsman (D), architectural	017.281-026	Design D., electromechanisms
002.281-010	Design D., ram-jet engine	017.281-034	Detailer
002.281-014	D., aeronautical	017.281-038	D. apprentice
002.281-018	Engineering checker	017.281-042	D., black and white
002.281-022	Flight test data transcriber	017.281-046	D., commercial
003.281-010	D., electrical	017.281-054	D., heating and ventilating
003.281-014	D., electronic	017.281-058	D., map
003.281-022	Estimator and D.	017.281-062	D., oil and gas
005.281-010	Designer, highways	017.281-066	D., plumbing
005.281-014	D., civil	017.281-070	D., refrigeration
005.281-018	D., structural	017.281-078	D., topographical
007.181-014	Die designer	017.281-082	Multiplex projection topograph
007.181-018	Die designer apprentice	017.281-086	Technical illustrator
007.181-022	Engineering assistant mechanical equipment	017.281-090	Tracer
007.281-014	D., mechanical	018.181-010	Surveyor, topographical photography
007.281-026	Lay-out man and checker	018.281-010	Editor, map
010.281-018	D., geological	018.281-014	Mosaicist
010.281-026	D., mine	018.281-018	Photogrammetrist
014.281-018	D., marine	019.281-010	Auto-body-design checker
017.281-010	Auto-body designer	019.281-010	D., landscape
017.281-014	Auto-body layout D.	019.281-014	Office-layout-service man
017.281-022	Cable lay-out man	249.281-010	Drafting clerk

Employment and Major Employers

Actual employment of draftsmen in the nation totaled about 309,500 in 1970. A majority of draftsmen are found in the following industries: engineering and architectural services, electrical machinery manufacturers, non-electrical machinery manufacturers, fabricated metal products manufacturers, and transportation equipment manufacturers. The remainder are widely scattered among many types of employers.

In spite of the variety of industries employing draftsmen and the large number of specialties, the occupation represented less than two-fifths of one percent of total national employment. In comparison, secretaries and typists comprised nearly four and one-half per cent of national employment in 1970.

Demand

The total number of draftsmen employed throughout the United States is expected to increase steadily at an average annual rate of around 4 per cent. At this rate there will be about 375,000 draftsmen in 1975 and an estimated 435,900 employed in 1980. However, draftsmen will still represent only 0.46 per cent of the total occupational employment in 1980, even if those projections are realized.

Also shown in the table are projections of total employment for each classification to 1975. The 29.4 per cent increase projected over the six year period, 1969-1975, yields an average annual rate of increase of 4.9 per cent, which is above the projected national rate. In other words, it is anticipated that the rate of development of new draftsman jobs in Oregon will exceed the national rate.

In addition to the expansion created by new or enlarged employers, Table 2 presents estimates of the demand for new workers in this occupation over the six year period to replace workers who withdraw from the labor force (retire, die, etc.).

It is likely that some small demand for draftsmen is generated by the movement of currently employed draftsmen to other occupations. The amount of this increment as it affects total demand is unknown.

Table 2: Annual Average Wage and Salary Employment of Draftsmen, Oregon, 1969, With Projections and Expansion and Replacement Needs to 1975

D.O.T. Code	Job Title	1969 Annual Average Employment	1975 Forecast Employment	Total Expansion and Replacement Needs 1969-1975
001.281	Architectural draftsman (d.)	657	794	151
003.281	Electrical and electronic d.	235	326	108
005.281	Civil and structural d.	566	721	249
007.281	Mechanical draftsman	812	1,126	347
017.281	Map draftsman	168	190	35
	Totals	2,438	3,157	890

Source: Oregon Employment Division, Research and Statistics Section. Oregon Industry-Occupational Matrix Estimates. Unpublished. 1971.

Table 3 presents similar data for the Portland Area* and the Eugene and Salem Standard Metropolitan Statistical Areas (SMSA's).

Table 3: Annual Average Wage and Salary Employment of Draftsmen with Projections and Expansion and Replacement Needs to 1975, Portland, Eugene, and Salem Areas, 1969.

D.O.T. Code	Job Title	1969 Annual Average Employment	1975 Forecast Employment	Total Expansion and Replacement Needs 1969-1975
Portland Area* (Oregon Portion)				
001.281	Architectural draftsman (d.)	364	401	42
003.281	Electrical and electronic d.	122	154	36
005.281	Civil and structural d.	270	288	80
007.281	Mechanical draftsman	726	976	290
017.281	Map draftsmen	90	99	16
	Totals, Portland SMSA	1,572	1,918	464

Table 3 (cont.)

D.O.T. Code	Job Title	1969 Annual Average Employment	1975 Forecast Employment	Total Expansion and Replacement Needs 1969-1975
Eugene SMSA (Lane County, Oregon)				
001.281	Architectural draftsman (d.)	86	98	14
003.281	Electrical and electronic d.	INA	INA	INA
005.281	Civil and structural d.	28	43	16
007.281	Mechanical draftsman	26	37	14
017.281	Map draftsman	INA	INA	INA
	Totals, Eugene SMSA	140	178	44
Salem SMSA (Marion & Polk Counties, Oregon)				
001.281	Architectural draftsman (d.)	50	72	23
003.281	Electrical and electronic d.	43	45	5
005.281	Civil and structural d.	INA	INA	INA
007.281	Mechanical draftsman	42	48	27
017.281	Map draftsman	37	49	15
	Totals, Salem SMSA	172	214	70

* Includes Multnomah, Clackamas, Washington & Columbia Counties (Oregon Administrative District 2)

INA = Information not available

Source: Oregon Employment Division, Research & Statistics Section. Portland Area and Eugene and Salem, SMSA's Industry-Occupational Matrix Estimates. Unpublished. 1972.

In the State of Washington, annual average employment of draftsmen in all specialties in 1970 totaled 4,020. It is anticipated that total employment in that state will be stable at 4,050 in 1975. However, about 230 currently employed Washington draftsmen are expected to withdraw from the occupation so that a total of 260 new workers will be needed by 1975 or an average of 52 each year. Occupational Trends-Washington State 1970-1975 states that:

> Approximately 30 per cent (of Washington draftsmen) will be employed in engineering and architectural service firms; 10 per cent each in aerospace, machinery production, construction firms; and business services; and 5 per cent in government agencies. Another 15 per cent will be self-employed. Demand for draftsmen will rise along with expanding construction activity and increased mechanization in manufacturing plants. Nevertheless, general aerospace losses will hold the gain (over the five year period) to only 30 new jobs. The use of electronic drafting equipment and photo-reproduction of drawings will eliminate some of the more routine tasks for draftsmen, but

extra technical work will be created by rising complexity of design problems in modern products and processes. . . ."[1]

No firm data on current or projected occupational employment in the State of Idaho is presently available.

Current Demand

The U.S. Employment Service collects information each month on the number of job openings received from employers by area Employment Service offices which have Job Banks.

Table 4 presents information derived from the latest Job Bank Summary for the principal draftsman specialties. Data on Job Bank openings from 60 reporting Job Banks and for the Portland, Oregon Job Bank are shown.

Table 4: Current Job Openings for Draftsmen Reported during April 1972 by Job Banks for 60 Areas Including the Portland, Oregon Area*

		Reports from 60 Job Banks			Portland Job Banks		
D.O.T. Code	Job Title	# of Openings	Min.Av. Pay	Hard-to-Fill Openings**	# of Openings	Min.Av. Pay	Hard-to-F Opening
001.281	Architectural draftsman	126	$7,760	62	3	$6,600	1
003.281	Electrical & electronic d.	134	7,340	83	3	8,660	1
005.281	Civil draftsman	153	6,561	81	4	7,800	1
007.281	Mechanical draftsman	233	7,076	116	9	7,711	3
017.281	Map & misc. draftsman	211	6,744	122	3	8,166	0
	Totals	857	$7,046***	464	22	$7,767***	6

* Portland Job Bank principally serves Oregon Administrative District 2 which includes Multnomah, Washington, Columbia and Clackamas Counties. The 60 Job Banks reporting for April 1972 comprise about half of the total number which are to be included in the National Computer Job Bank within a few months. The data presented here, however, should not be inf as representing any identifiable proportion of total national demand. Instead, the data presented should be considered illustrative only.

** These are job openings which have been unfilled for 30 days or more.

*** Weighted minimum average salary offered.

Source: Job Bank Openings Summary for April 1972. Occupation Summary Microfiche No. -001 and Location Summary Microfiche No. -054 (Portland Area).

[1] Occupational Trends-Washington State, 1970-1975. State of Washington Employment Security Department. October 1971. p. 40.

Analysis

The total of 897 draftsmen job openings in April 1972 represented almost 0.6 per cent of all openings reported by the 60 Job Banks. The 464 draftsmen jobs which had gone unfilled for 30 days or more amounted to nearly 1.6 per cent of all jobs unfilled for 30 days or longer. Both percentage figures are significantly above the proportions of draftsmen jobs to total national occupational employment for 1970 and projected to 1980. If the job openings reported by the 60 Job Banks are fairly representative of the national occupational demand picture for that month (which is not necessarily the case), the data suggest that at least during April 1972 the national demand for draftsmen substantially exceeded the 1970 and 1980 proportions of draftsmen to total occupational employment. It seems unlikely that the demand for draftsmen varies much with the season of the year. A more probable explanation is that the demand for draftsmen is cyclical, that is, that the need for draftsmen responds to swings in the state of the general economy and especially to the relative economic health of a few major industries such as construction.

The 22 draftsmen positions listed by the Portland Area Job Bank in April 1972 is, however, a disproportionately low figure compared to the demand reported by other Job Banks. The Portland openings represent slightly over 2.5 per cent of all draftsmen openings reported by the 60 Job Banks but the Portland Job Bank's 4,700 openings for all occupations represented over 3.2 per cent of all occupational openings listed by all reporting Job Banks for that month. On the other hand, the projected average monthly expansion and replacement demand for draftsmen in the Portland Area, as derived from Table 3 above, is only 6.4 openings in contrast to the 22 openings offered in April 1972.

Supply

The acquisition of accurate, comprehensive data on the current or projected supply of trained manpower for an occupation is considerably more difficult than determining current or projected demand. Gradually, more information is being obtained on the

subject of manpower supply for a variety of occupations. The data are being provided by an increasing number of agencies concerned, at least in part, with training people to enter or to upgrade their skills and knowledge of various occupations. Schools in Oregon at several levels (junior and senior highs, community and four-year colleges, universities, technical and proprietary schools) are becoming important sources of data on the number of students receiving training and earning awards, certificates or diplomas in a wide range of curricula. Much of this information is being collected, compiled and published by the Oregon Educational Coordinating Council annually. The Oregon Board of Education has contracted with Palo Alto Educational Systems of Scottsdale, Arizona to provide a computerized data system known as VERIFY (Vocational Education Reporting and Individual Follow-up by Year) yielding current student enrollment by approved occupational cluster for each school and school district in Oregon. Also, information is published semi-annually by the Oregon Bureau of Labor giving county and state summaries of the number of apprentices in and completing training programs for a number of occupations.

However, relatively little hard data are available on other manpower sources. For instance, the armed services train military personnel in a large number of skills, some of which are usable in civilian occupations. Thus far the number of ex-servicemen returning to Oregon (or any other geographic area) having specific occupational skills and training is unknown unless they register with the Oregon Employment Division. Similarly, little is known about the number or the occupational training and experience of geographic migrants entering or leaving Oregon or its various political subdivisions. There is also a scarcity of data on in-service or on-the-job training not organized under the apprenticeship program.

Because of the data shortages described above, the figures given below should be considered incomplete and not indicative of the actual supply/demand relationship at the

current time or in the future. According to Bill Manley, Lane I.E.D. Director of Career Education, the latest VERIFY report shows a total of 95 students presently enrolled in approved "drafting" occupational cluster curricula in Oregon secondary schools. Table 5 present training programs offered during 1970-71 and 1971-72 at several Oregon public and private post-secondary institutions. Data on current enrollment are available for the 1971-72 year only.

Table 5: Draftsmen Training Programs Offered in Oregon Post-Secondary Institutions 1970-71 and 1971-72

Program		Students Completing (70-71) Programs Requiring		Programs Offered in 1971-1972
		Less Than 2 Years	2 or More But Less Than 4 Years	
Arch. Drafting	Ore. Polytechnic Inst.	20		X
Arch. Drafting Tech.	Portland C.C.		7	
	Umpqua C.C.	1		
	Treasure Valley C.C.		1	
Civil Drafting Tech.	Blue Mountain C.C.			X
Drafting Tech.	Ore. Polytechnic Inst.	4		X
	Chemeketa C.C.	7	20	X
	Clatsop C.C.		2	X
	Linn-Benton C.C.			X
	Portland C.C.			X
	Umpqua C.C.			X
Engineering Drafting Tech.	Ore. Technical Inst.			X
Industrial Drafting	Ore. Polytechnic Inst.	19		X
Engineering Graphics	Linn-Benton C.C.		3	
	Lane C.C.		8	
	Mt. Hood C.C.		8	
	Portland C.C.		42	
Machine Drafting & Design Tech.	Ore. Polytechnic Inst.	19		X
	Clackamas C.C.			X
	Mt. Hood C.C.			X
	Treasure Valley C.C.			X
General Drafting	Blue Mountain C.C.			X
	Chemeketa C.C.			X
Mechanical Drafting	Portland C.C.			X
	Treasure Valley C.C.			X
Technical Drafting	Lane C.C.			X
	Portland C.C.			X
Technical Illustration	Portland C.C.			X
TOTALS		70	91	

Source: Oregon Educational Coordinating Council. Degrees and Awards Offered and Granted in Oregon's Post-Secondary Institutions. Feb. 1972.

Summary

Draftsmen are members of a small but expanding occupation. As with most other occupations, the demand for draftsmen will fluctuate from time to time and there may be recurrences of oversupply, particularly in certain specialties, industries, or geographic areas such as occurred during the severe retrenchment that affected the aerospace industry in recent years. Nevertheless, as American industry continues to expand and redesign its products and services, the demand for the special skills and talents of draftsmen will continue to grow.

The demand, however, is not unmet. In fact, at present it appears that Oregon schools are training new draftsmen at a rate slightly exceeding the present and projected demand here. Table 6 illustrates:

Table 6: Apparent Supply/Demand Relationship for Draftsmen in Oregon

Students completing drafting curricula in post-secondary schools (1970-71)	161*
Estimated average annual demand to meet replacement and expansion needs	145**
Apparent excess supply	16

* From Table 5 above
** From Table 2 above. Obtained by simple averaging of the total six year (1969-75) estimated demand figure of 890.

If we add to these figures an unknown number of students completing high school drafting curricula who enter the labor force without further training, college and university graduates and dropouts from professional schools such as architecture and engineering who seek or accept draftsmen jobs, and trained immigrants from other states, the excess supply total becomes significantly greater.

APPENDIX J

Career Information System

NUMERICAL LIST OF OCCUPATIONS

Revised 8/72

11 ADMINISTRATIVE OCCUPATIONS

(General Administrative)

1132 Hotel and Motel Managers
1134 Hospital Administrators
1136 Education Administrators
1138 Public Administrators
1142 Small Business Operators
1144 Business Executives
1152 Construction Superintendents
1154 Production Superintendents
1162 Sales and Service Managers
1172 Military Officers

(Administrative Staff)

1184 Buyers and Purchasing Agents
1186 Personnel Managers
1195 Public Relations Workers

14 CLERICAL OCCUPATIONS

(General Clerical)

1411 Office Managers
1412 Secretaries
1414 Stenographers
1416 Clerk Typists
1418 General Office Clerks
1422 Teacher Aides

(Reception)

1452 Receptionists
1454 Telephone & Telegraph Operators
1456 Messengers

16 BOOKKEEPING-ACCOUNTING OCCS.

(General Accounting)

1614 Accountants and Auditors
1616 Bookkeepers

(Credit and Collection)

1634 Appraisers and Underwriters
1636 Loan Officers
1642 Cashiers and Bank Tellers
1646 Railroad Clerks

(Data Processing)

1684 Programmers & Systems Analysts
1686 Computer Operators
1688 Key Punch Operators

(Other Office Machine Operators)

1692 Office Machine Operators

21 SOCIAL RESEARCH & PLANNING OCCS.

2144 Social Scientists
2164 Social Program Planners
2174 Freelance Writers
2176 Reporters and Editors

23 ENGINEERING & DESIGN OCCUPATIONS

(Planning)

2314 Urban Planners
2316 Architects
2318 Ecologists

23 ENGIN. & DESIGN OCCS. (Cont.)

(Math)

2332 Mathematicians & Statisticians

(Engineering)

2354 Engineers
2356 Engineering Technicians

(Drafting)

2364 Draftsmen

26 LABORATORY OCCUPATIONS

2624 Physical Scientists
2626 Earth Scientists
2628 Soil Scientists
2644 Opticians
2654 Medical Technologists
2656 Laboratory Testers
2672 Quality Control Inspectors
2674 Sanitarians

31 MECHANICS OCCUPATIONS

(Mobile Equipment)

3112 Automobile Mechanics
3114 Truck & Heavy Equip. Mechanics
3116 Aircraft Mechanics
3118 Small Engine Repairmen
3124 Service Station Attendants
3126 Oilers

(Heavy Machinery)

3142 Millwrights
3144 Industrial Machinery Repairmen
3146 Heat & Cooling System Mechanics

31 MECH. OCCS. (Cont.)

(Small Machinery)

3164 Office Machine Repairmen
3166 Telephone Installers-Repairmen
3168 Radio and TV Repairmen
3169 Appliance Repairmen

(Instruments)

3184 Jewelers
3186 Instrument Repairmen

34 BUILDING MAINTENANCE OCCUPATIONS

(Commercial Building)

3422 Building Maintenance Men

(Cleaning)

3454 Room Maids
3455 Janitors
3456 Domestic Service Workers

41 AGRICULTURAL & FORESTRY OCCS.

(Forestry)

4124 Foresters
4126 Fish and Wildlife Specialists
4128 Forestry Aides

(Horticulture)

4144 Groundskeepers and Gardeners
4146 Floral Designers

(Commercial Agriculture)

4164 Farmers and Farm Managers
4166 Farm Workers
4168 Seasonal Farm Laborers

2 CONSTRUCTION OCCUPATIONS

4222 Powdermen
4242 Painters
4244 Plasterers
4246 Cement and Concrete Finishers
4254 Carpenters
4264 Bricklayers
4274 Plumbers
4276 Floor Layers
4278 Roofers
4286 Construction Laborers
4288 Railroad Laborers

3 FOOD PRODUCTS OCCUPATIONS

4324 Bakers
4326 Meat Cutters
4328 Commercial Fishermen
4348 Cannery Workers

4 TEXTILE AND APPAREL OCCUPATIONS

(Textile Manufacturing)

4424 Textile Machine Operators

(Apparel Manufacturing)

4442 Clothes Designers-Patternmakers
4446 Seamstresses and Tailors
4448 Sewing Machine Operators

(Laundry)

4464 Laundry & Dry Cleaning Workers

(Other)

4494 Upholsterers
4496 Shoe Repairmen

45 TIMBER PRODUCTS OCCUPATIONS

4514 Fallers and Buckers
4516 Chokersetters

(Sawmill and Plywood)

4522 Sawmill Log Handling Occups.
4524 Plywood Log and Block Handlers
4526 Veneer Production Occupations
4528 Planer Mill Occupations
4532 Sawmill Sawing Occupations
4534 Sawmill Drying Occupations
4536 Sawmill Greenchainmen
4538 Lumber Graders and Inspectors
4542 Sawmill Waste Recovery Occups.
4544 Veneer Drying Occupations
4546 Veneer Salvage & Upgrading Occs.
4548 Plywood Lay-Up Occupations
4552 Plywood Finishing Occupations
4554 Plywood Laborers
4556 Woodworking Machine Operators
4559 Sawmill Laborers

(Pulp and Paper)

4574 Pulp and Paper Workers

(Furniture)

4584 Furniture Making Machine Oprs.
4586 Cabinetmakers

47 GRAPHIC ARTS OCCUPATIONS

4724 Commercial Artists & Designers
4734 Photographers
4766 Printing Occupations

54 METAL WORKING OCCUPATIONS

(Refining and Casting)

5421 Metal Refining Occupations
5422 Metalworking Patternmakers

54 METAL WORK. OCCS. (Cont.)

(Refining & Casting cont.)

5424 Molders
5426 Foundry Workers

(Machining)

5462 Tool and Die Makers
5464 Machinists
5468 Saw Filers and Tool Sharpeners
5472 Machine Tool Operators

(Metal Joining and Fabricating)

5482 Welders
5484 Sheet Metal Workers
5486 Body and Fender Repairmen
5488 Blacksmith & Forge Shop Workers

56 ELECTRICITY & ELECTRONICS OCCS.

(Electricity)

5624 Linemen
5626 Electricians & Elect. Repairmen

(Electronics, Technical)

5664 Broadcast Technicians

(Electronics, Manufacturing)

5686 Electronics Assemblers

59 OTHER PRODUCTION OCCUPATIONS

5914 Petroleum Processing Occups.
5918 Rubber & Chemical Process Occs.
5924 Rubber and Plastics Fabricators
5926 Production Painters & Finishers
5944 Powerhouse Firemen
5946 Sewage Plant Operators
5966 Production Assemblers
5982 Hand Craftsmen

61 TRANSPORTATION OCCUPATIONS

(Managerial and Technical)

6126 Air Traffic Controllers
6128 Railroad Conductors

(Transportation Equipment Operators)

6142 Bus and Taxi Drivers
6144 Truck Drivers
6152 Bulldozer Operators
6154 Operating Engineers
6156 Yarding and Loading Occupations
6158 Industrial Truck Operators

(Other)

6172 Railroad Engineers and Firemen
6174 Railroad Brakemen and Switchmen
6184 Ship Officers and Engineers
6188 Pilots and Flight Engineers

71 STOCK CONTROL OCCUPATIONS

7112 Car Loaders
7114 Warehousemen
7116 Shipping and Receiving Clerks
7118 Stock Clerks
7122 Mail Carriers
7124 Newspaper Carriers
7126 Packers and Wrappers
7134 Box Boys
7164 Librarians
7166 Library Assistants

74 SALES OCCUPATIONS

7414 Commodities Salesmen
7415 Securities Salesmen
7416 Insurance Salesmen
7417 Real Estate Salesmen
7418 Automobile Salesmen
7422 Business Services Salesmen
7434 Routemen
7454 Salespersons
7484 Sales Clerks

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